247

NEW LONDON TRANSPORTATION STUDY

DECEMBER 1967

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NEW LONDON TRANSPORTATION STUDY

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Mr. Waldo K. Clarke
President
City Planning Board
New London, Connecticut

Dear Mr. Clarke:

We are pleased to submit this study and comprehensive analysis of traffic and transportation of the City of New London. Trends and developments affecting transportation needs have been determined through the year 1990. Numerous dynamic forces in progress now and in the near future have been considered in formulating a street system concomitant with future arterial and highway plans, and with anticipated improved parking conditions.

This study has been accomplished at a time when New London is in the formative stage of an exciting revitalization program, a distinct community advantage. With large portions of the central area of the City to be rebuilt, there is an unusual opportunity to plan extensive changes in the circulation system. In this respect, close cooperation has been pursued with responsible city officials and state highway representatives whose present programs and future plans are intricately interwoven with mobility and the complex patterns of urban development.

Some of the suggested improvements must be considered flexible because redevelopment and highway planning are not complete. Some improvements can be implemented immediately. Those, however, that relate to other formative development are schematic and subject to adjustment in the detailed engineering which must precede actual construction.

Significantly, the study sets forth a general plan of transportation development which will satisfy New London's needs for years to come -- a plan which is correlated with other growth and development phases of city life.

Very truly yours,

JAMES P. PURCELL ASSOCIATES
Nicholas M. Setteducato
Nicholas M. Setteducato
Partner

NMS/shs

ACKNOWLEDGMENT

We gratefully acknowledge the assistance given to us by the many public and private agencies with whom we have consulted during this study.

The wholehearted cooperation which was given to us by City, Regional and State planning, traffic and engineering groups, and by private transit companies has made this study possible.

Our sincere thanks to all who have contributed to the successful consummation of this project.

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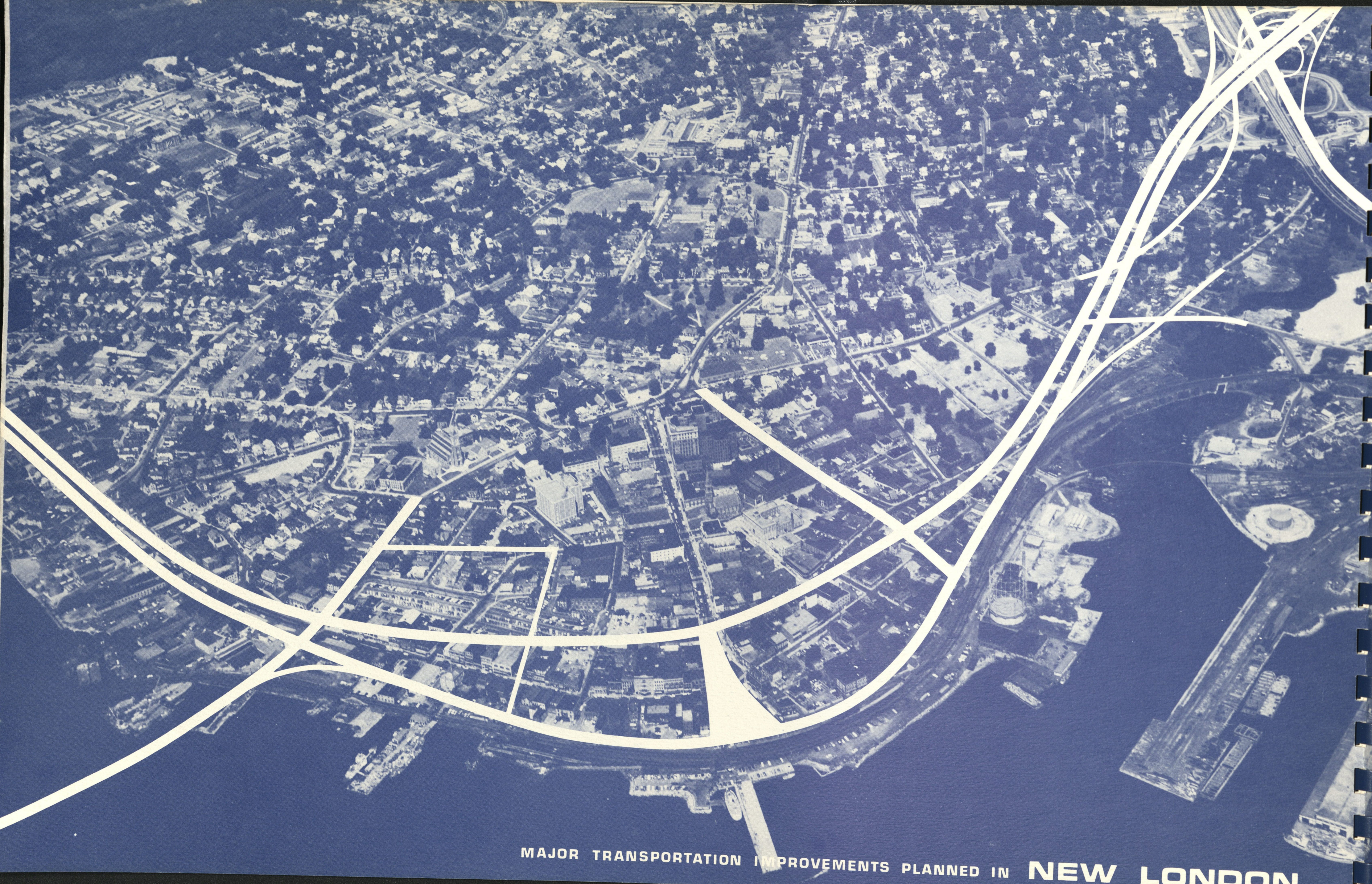


MAJOR TRANSPORTATION IMPROVEMENTS PLANNED IN **NEW LONDON**

Introduction

Transportation has played a vital role in the historical development of the City of New London. The City lies in a strategic position within the Southeastern Connecticut Region — midway between Boston and New York City. It occupies a waterfront area exposing it to waterborne transportation and commerce and acts as a corridor for overland transportation between the western part of Connecticut, and Rhode Island and Massachusetts to the east.

As a core city on the Southeastern Connecticut Region, New London attracts and generates a significant volume of automobile and truck traffic in and around its environs. Similar to the early settling of other American communities, the land's physical characteristics were instrumental in locating the first streets and buildings. Substantially, the configuration of streets and roadways initiated during early settlement have not been altered.

Again, not unlike other early American cities, rail travel and freight has made a significant contribution to the over-all transportation picture. It is of note, however, to relate its future prospects in the light of current developments and changes. Since World War II, a diminishing passenger and freight load are characteristic of most, if not all, eastern roads. Present rates of termination of service, route abandonment and mergers portend still further problems, yet to be solved. Notwithstanding the problematical atmosphere surrounding rail transportation, New London has and will continue its orientation — highway and auto-wise — due to: (1) its strategic geographic location, (2) the travel habits and desires of today's population, and (3) because significant, feasible changes can be more readily achieved in development of new streets and circulation pattern.

The above attitude is not expression of opinion, rather it is a reflection of the past development and present trends uncovered in this study.

Accessibility

New London is easily accessible from the north, east and west. U.S. Route 1, I-95 and Conn. Route 184 focus from the east at the Gold Star Memorial Bridge crossing over the Thames River into New London. From the west, U.S. Route 1, and I-95 (combined), U.S. Route 1A, and Conn. Route 85 are other state highways serving the community. The Connecticut Turnpike lies to the northwest and provides easy connections to U.S. 1, I-95 and Conn. Route 85. Then, Conn. Route 32 offers direct travel north parallel to the Thames River. (Location Map, Plate 1)

The Gold Star Memorial Bridge (U.S. 1 and I-95) is the main crossing of the Thames River. Thus, a large percentage of east-west traffic in Southeastern Connecticut must pass through the north section of the City. The proximate location of New London's central business district — about one mile — to the highways and bridge crossing, has been both an advantage and disadvantage. It is advantageous because close, quick access is afforded to large traffic volumes entering the commercial and shopping areas of the community, and to the commuter who resides in New London, but works in Groton or elsewhere to the east. Access off the highways and bridge, however, are indirect and insufficient in capacity to accommodate present let alone future traffic volumes. Congestion and peak-hour traffic delays were developed many years ago and continue in severity.

MAJOR DEVELOPMENTS

The imminent construction of a new Thames River crossing parallel to the Memorial Bridge will help to bring even larger traffic volumes to the periphery of the heart of the City.

Major land use changes are taking place, particularly through the vehicle of urban renewal. Large segments of the densely developed portions of the community will undergo substantial change in structure as well as in street pattern.

Other developments while not as broad-sweeping as urban renewal are taking place in New London and within the southeastern region. Schools and colleges, shopping centers and apartment houses are some of the more significant features. (See Plates 2 and 3).

STUDY OBJECTIVES

New London has long been conscious of the need for orderly, planned development. With the advent of federal financial assistance in recent years, the City's public administrators and elected officials have sponsored and fostered numerous planning, engineering, and other technical studies and efforts — designed to meet changing community needs and to improve the welfare of the City's habitants.

Well aware of changing conditions — urban renewal development — new bridge across the Thames and major traffic interchange — school expansion needs — parking deficiencies and a deteriorating street and circulation system — the Planning Board retained Purcell Associates to develop a comprehensive study and analysis of a traffic and transportation plan for New London.

The major objectives of such a study were four-fold:

I — Development of a coordinated plan for an efficient transportation system which will complement the General Plan of Development.[1] This includes present and future needs of New London relative to arterial routes, principal thoroughfares, collector and access streets.

II — Plan improvements and changes in the City street system to accommodate altered and increased flows of traffic to and from express highways, urban renewal areas, and otherwise all areas where land use densities are modified.

III — Examine and analyze major intersections along principal thoroughfares throughout the City.

IV — Provide a balanced plan for convenient parking facilities.

The study and report which follows leans heavily upon data and analyses developed by the Connecticut State Highway Department, the Southeastern Connecticut Regional Planning Agency, New London's Planning Board and its Department of Public Works. Purcell Associates has supplemented and updated available data by field studies and the procurement of numerous statistical information.

PART 1
NEW LONDON TRANSPORTATION STUDY

New London and the Southeastern Region

Present Traffic and Transportation
Trends and Development

CITY PLANNING BOARD

NEW LONDON
CONNECTICUT

WALDO K. CLARKE
PRESIDENT OF THE BOARD

RICHARD J. CARVER
SECRETARY

June 17 1968

Mr. Richard B. Erickson, Executive Director
S.E. Conn. Regional Planning Agency
139 Boswell Avenue
Norwich, Connecticut

Dear Mr. Erickson:

Enclosed is a copy of the New London Transportation Study.

This was done outside of the 701 Program and goes into more detail than normally allowed by the State and Federal Governments.

No action is required, however, we do want to keep you informed of the plans and progress being made in New London.

Best regards to all and thank you for the cooperation which helped to make this report possible.

Sincerely,

City Planning Board
Waldo K. Clarke, President

by: Richard J Carver
Richard J. Carver
Secretary

New London and the Southeastern Region

Of the 17 communities which comprises the Southeastern Connecticut Region, New London is the smallest. It has a land area of 6.1 square miles and is located in the southern tier of the Region along the west bank of the Thames River. The entire Region has a land area of about 511 square miles.

Of the three major "Employment Zones" within the Region (New London, Groton and Norwich), New London is clearly the most intense in terms of Employment Zone area versus total community land area.[2] As pointed out by SCRPA, the Employment Zones are significant in that they are the most densely developed areas of the Region, and generate the greatest traffic because of their highly intense economic and institutional activity. One needs only to compare traffic volumes along New London's many streets to those communities other than Norwich and Groton to understand the truth of this relationship. Of course, New London's center of retail and trade lies in the middle or at the heart of its Employment Zone.

Early in its growth and development, New London exerted a strong influence upon the Southeastern Region. This is evidenced even in contrast to the early independence of the Region's various communities when lack of transportation, social and economic behavior were less dominating influences than in today's pattern of life. While many changes have taken place in the intervening decades — specialization; improved financial status of people, generally; and, the automobile — New London has continued as one of the focal points of the Region. A primary reason has been its strategic location relative to overland and waterborne transportation.

Intense Development

Availability of developable land in New London is now at a critical state. About ten percent of its 6.1 square miles of area can be classified as good land for future development. Contrast this with the fact that about 80 percent of the Region's 511 square miles is in undeveloped land area. Thus, in terms of new lateral expansion, New London is near or at saturation. There is, however, the ever-present opportunity for vertical growth in the developed core. Already, existing and proposed urban renewal projects contain plans for more densely developed land use.

Analysis of Regional and New London land use patterns indicate the emergence of two distinct elements of growth: (1) the Region will continue to undergo additional development outside the developed cores, (22 percent out of about 26 percent growth between 1950-1960), and (2) New London will change its developed core through massive reconstruction programs over the next 20 years. The latter, notwithstanding New London's present land development ratio and population density of 5,513 persons per square mile — unmatched by any other community along the coastal area of the Region.

The proposed hurricane dike facilities will develop protection against recurring massive flooding in sections of the community heretofore exposed. Portions of the City which have deteriorated or become marginal development property will no longer be susceptible to water problems of inundation.

Population[3]

New London's rate of population growth has been unsteady since 1910. Between 1910 and 1930 a steady increase was developed and attributed to the growth of the textile trade and Regional industrialization. During the 1930's and 1940's, economic depression and regression of the textile industry stabilized population in New London as well as elsewhere in the United States. Between 1950 and 1960 population increase is ascribed to employment increases and more affluent economy in general (Graphs 1 and 2). Since 1960, there has been a slight decline, not unlike that which has happened to many core cities across the nation.

Study and analysis indicates the recent downward population trend will subside in 1967-1968 and then start a modest increase which will continue for several decades.

During the period 1910-1960, the Southeastern Region population expanded over 103 percent, whereas New London increased 74 percent. It is anticipated that in the future divergent increases will continue. With so much undeveloped land, the Region can absorb substantial population increases particularly in the presently desirable areas such as Waterford, Groton, East Lyme, Montville and Ledyard — all of which surround New London. New London's population, therefore, as a percentage of the Region's population, will decrease in the ensuing decades as it has in the recent past.

Economics

For many years New London has been the dominant trade center of the Southeastern Region. In 1955 New London's share of retail sales was over 37 percent of the Region's more than 168 million dollar volume (Graph 4). Norwich, to the north, was in a reasonably close second position with over 36 percent of total Regional retail sales. Groton was a distant third at about 10 percent. Since 1955, major changes have taken place. 1962 retail sales indicate that while New London had a substantial increase in retail sales (1955 - 1962, + 18 million dollars), its relative share of the Region's sales declined (-2.4 percent).

New London's share of wholesale trade closely parallels its dominant role in retail trade. In 1952 New London captured 32 percent of the Region's wholesale volume.

Government oriented business and industry have marked the Southeastern Region since 1940. Military and defense production are risky at best. Since the Korean Conflict in the early 1950's, however, sustenance of major government business has continued. Chemical industries and other industrial types have developed in both New London and the Region which now underscore its economic base more securely.

New London's labor force appears to be in a strong position. The present unemployment rate is near 2.5 percent which is well below the current nationwide fluctuation of between 3.8 and 4.3 percent. Of significant importance is the fact that a labor shortage exists in several areas of skilled labor and part-time employment.

Comparatively, the Region also has been at a good employment status for some time. Generally, unemployment rates have been below the national averages and recent studies indicate this relative position will be maintained. Caution must be observed in comparing the City with the Region, however, because of the major influence exerted by defense-oriented industry. In this respect, New London's employment is more tightly interwovern with its sister community, Groton, than with the Region.

For example, in 1960 of the nearly 3,500 persons employed in manufacturing, more than 1,600 or slightly less than 50 percent were employed at Electric Boat in Groton. Over-all, this represents almost 15 percent of New London's total labor force — a substantial total involved in one industry at one location. Thus, Groton, New London and communities proximate to them (with large labor force focused at Electric Boat) have an inter-relationship with one another which is stronger than their relationship with other parts of the Region.

Transportation

The means by which much business is conducted, commuters travel to work, shop and perform social and recreational travel within the Region, is primarily street and highway oriented. Automotive transportation is the major mode of travel. Transit and railroad travel are limited. Inter-city bus operation exists, but commuter rail travel is negligible to non-existant.

The road and street network within the Region (Plates 2 and 3) generally is satisfactory to accommodate travel demands outside the various developed cores. There are, to be sure, certain deficiencies which are apparent during daily peak hours of the day and, periodically, where recreation traffic generators exist. These excess demands upon the existing network are not severe enough to warrant major concern.

Within New London, however, traffic and circulation conditions are seriously deficient. Compared to other parts of the Region, and its other developed cores New London's traffic conditions, particularly in its central business district and immediate environs, may be termed critical. Critical to a point where the Community's economic stability and future development are affected.

In terms of the "level of service" provided, the City has experienced a continual downgrading over the past several decades. Level of service is defined as:

> ". . . a term which, broadly interpreted, denotes any one of an infinite number of differing combinations of operating conditions that may occur on a given lane or roadway when it is accommodating various traffic volumes. Level of service is a qualitative measure of the effect of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience and operating costs. "[4]

Streets and roadways are much the same as they were back in the years before World War II. Some remedial changes have taken place such as traffic signal installations, striping, signing, etc., but these have not been developed in a coordinated manner, nor have they assisted in upgrading the traffic "level of service" in view of conditions prevalent.

Substantially, continued growth and development have brought concomitant traffic demands far exceeding the capacity of the street and road network. To continue to absorb traffic increases generated by more intense development will only result in stagnation, particularly during peak travel periods which are currently at the saturation level in the City's core area.

Major Regional Developments

As previously indicated, New London is almost wholly developed and the Region is not. There are many attractive locations outside the City limits which can spawn industrial, commercial and residential development.

Groton, across the Thames, has been preparing massive development plans for a central business district and peripheral dense land use. Waterford's population growth in the past decade has been outstanding (between 1940-1960, better than a 130 percent increase). These may be viewed as typical of changing characteristics within the Region.

Plate 2 indicates the extent of major regional developments which surround the City. Each has substantial effect upon transportation and travel in and around the City. Even more important, from the economic standpoint, is that they are taking place around New London. While the City does not have the land area to contain additional lateral growth, satellite development is underway which will spread the urbaniztion of contiguous rural and suburban areas. These more dense land uses will generate more auto trips and increase the complexity of travel desires.

New interstate and primary highways being constructed and programmed in the near future will facilitate long-distance travel through and into the area. But what is being planned to accommodate increased local travel and the future influx of long-distance traffic volumes? Until now, unfortunately very little has been done.

Even while New London's lateral growth is limited, the City will change. Its density, people per acre, is high and will grow higher. New retail use and apartment complexes are being built; more are being planned. Massive renewal plans will literally change the central business district. Many of these changes permit the opportunity to rehabilitate and build new street and terminal facilities which can do away with present deficiencies, as well as absorb anticipated demands for a long period in the future.

Present Traffic and Transportation

In recent years the study and analysis of transportation problems and the relationship of planning and traffic data to travel habits and desires has received enormous attention. In many instances, this attention has been directed towards a preponderance of sophisticated means and methods to determine social, economic and travel characteristics and to rationalize the converse relationship of land use and transportation facilities. Measurement and achievement has been accomplished with variable success. The efficacy of doing so, however, has neither limited nor does it preclude a pragmatic approach based upon specific events and occurrences, and the analysis of existing facilities in connection with their capacity to accommodate existing and future traffic demands.

In New London and its immediate environs, the more pragmatic approach has been taken. Several specific events were instrumental in establishing a format for the method of analysis. Principally, these are the large scale change in major highways and interchange connections coupled with extremely widespread present and future urban renewal programs.

While no mathematical model [5] has been developed, many of the same parameters evaluated through model studies are evaluated herein.

Basically, this study embodies an inventory of existing conditions, including traffic flow, capacities, and interferences which formulates a valid demand vs. capacity and need vs. capability relationship. Simultaneous development of a land use plan has been useful, particularly with respect to future projections and locating major traffic generators — existing, programmed and proposed. [6] The opportunity to analyze and study transportation and land use together, afforded the same technical and informational possibilities available or used in developing a model.

Street and Roadways

The present street system in New London is a sharp reflection of the City's past needs. In large measure, it is obsolete. The combination radial-grid system is a result of two major influences: (1) geography and (2) land use development.

Typical of many early American communities, the core area or early settlement contains short blocks which location has been influenced by geographical dictates. The hilly terrain, for example, necessitated locating North Bank and Main Streets on ridge lines. Short blocks, with disjointed intersections were not designed for automobile travel. The concentration of habitation "around the center area" is easily outlined.

Beyond the confines of an early settlement, the pattern of longer blocks and streets emerges. Primarily rectangular, the system of streets is typical of countryside or suburban development over an extensive period of time. Thoroughfares, collector streets and access roads have been developed with more respect to automotive transportation.

The C. B. D. area, unfortunately, was shaped and formed long before the auto; thus, its obsolescent streets in the light of reduced pedestrian travel and the demise of the horse and buggy and trolley cars. Antithetical to these changes has been the intensification of commerce and trade in the very area where travel becomes more difficult by today's means.

The extensive growth and development of the core area became vital to the Southeastern Region. This has transpired despite the fact that no major street changes occurred which would increase mobility within the core area.

From Bank Street to the north, the misaligned street system is highlighted by the heavy bands of travel flow which are shown on Plate 4. These flows (north of Bank Street) indicate the most desirable travel routes in terms of shortest distance, time and most convenience. However, minute examination indicates circuitous routing except for travel along Colman Street. Southerly from Bank Street, travel is more convenient and fluid except when recreation-oriented travel, which is destined for Ocean Beach, develops on holidays and weekends.

In the northern portion of the community, the network of disjointed thoroughfares is forced to function in dual capacity; i.e., the streets serve both as thoroughfares and collector roadways. Almost without exception, there is deficient capacity for peak hour travel. It would appear, therefore, that they were not intended to function as thoroughfares, but were forced to act in that capacity because more street development never took place.

In a majority of cities, comparable to the size of New London, thoroughfare and collector street systems constitute between 20 and 30 percent of the total street mileage. By statistic, New London — 29 percent, seems to have a favorable mileage in the major street classification. The comparison breaks down upon examination, however, since the capacity of the thoroughfares is woefully deficient because of narrow street widths and the interferences encountered along each route.

New London — Travel Patterns

The surrounding environs have a major influence upon New London's travel patterns. To be sure, most core cities or cities with extensive C. B. D. areas are massive traffic generators. If not for commercial retail trade, then, because of the high rate of employment which substitutes as a key generating element within the densely developed centers. Regardless, the format is unchanged, which results in two peak periods of travel, daily, and minor peaks at various times for one reason or another.

EXTERNAL TRAFFIC

Interestingly, over 56 percent of the City's vehicular traffic is generated externally. Plate 4, 1965 Average Daily Traffic Flows and Plate 5, 1965 Traffic Desire Lines show the significance of the above. Plate 4 details those arteries which accommodate heaviest traffic flows. Three arteries oriented east-west and four (three in the southern part of the City) oriented north-south carry most of the heavy volumes.

Plate 5 shows the travel pattern in zonal arrangement. The City, as well as the contiguous environs and beyond are divided into zones. The 1965 desire line, for example, from the east (Groton side of the Thames), is extremely heavy in comparison to entry from other sides of the community. The three prongs of this movement are headed into the New London C. B. D. (Zone 01), Zone 02, and external zones (middle part of band) westbound on Route U. S. 1 and I-95. There are other distributions of this major desire line, but in comparison to those shown, they are insignificant.

The major points of traffic entry consist of the Gold Star Memorial Bridge from the east; Mohegan Avenue and Williams Street from the north; Route U. S. 1 and I-95, Broad Street - Jefferson Avenue, Chester Street and Bank Street from the west. Few problems exist for traffic destined for New London except for those vehicles entering from the east.

The Gold Star Memorial Bridge, Interchange with Connecticut Route 32 (Mohegan Avenue) and other streets has been a major traffic bottleneck for some time. Presently, the State Highway Department is developing plans to construct a new river crossing and an extensive interchange to relieve existing conditions and to accommodate future traffic increases. These plans have been examined during this study and have been coordinated in the development of future proposals presented elsewhere in this report.

The Mohegan Avenue - Williams Street corridor will be affected materially by new highway developments focusing at the new interchange. Inspection of plans, again, reveals that traffic flow should be smooth and free of current problems. No adverse affects are expected with access and collector streets in the area of Mohegan Avenue.

Jefferson Avenue and Chester Street serve as ingress and egress for about 13,000 vehicles per day. There are no problems at the City boundaries with either street. A problem has developed at the Jefferson - Chester intersection, however, which is related to through traffic movement. Less than half of the above volume terminates in New London, with the majority using the Chester - Jefferson route for access to I-95 from Waterford. Concentration of traffic at the intersection of the two streets has exceeded the capacity of the intersection. Remedial steps are advised elsewhere in the report.

INTERNAL TRAFFIC

Existing Traffic Flow Conditions, Plate 6, details the locations within the City where major and minor traffic problems have developed. In the downtown or core area many of the problems have existed for long periods of time. The more critical locations match up with the high traffic volumes shown on Plate 5. Several other areas where abutting access or other frictions develop will not appear in the high volume locations.

> Specifically, the ability to overcome the deficiencies shown on Plate 6 is one of the major objectives in achieving a fluid transportation system for the City. Opportunity does exist to make most of the changes required.

The lack of adequate arterial routes to and from the downtown area is evidenced by the isochronal lines which appear on Plate 7. These lines indicate travel time from the center of the C. B. D. to areas throughout the City. The isochronal lines for New London approximate a semi-circular pattern and show that vehicular travel during periods of peak traffic, to points equidistant from the downtown area, can be achieved as slowly or as quickly on the numerous collector and access streets as via the arterial streets. As traffic demands diminish (with increased distance from downtown), the spacing of isochronal lines increases indicating less restrictive traffic flow. Little change in spacing in the southwest central area shows that traffic flow is somewhat equally restrictive at a short distance from the C. B. D. in that area. To the north, spacing increases progressively which coincides with more fluid traffic movement.

Heavy Traffic Routes To Downtown

Essentially, three major travel corridors radiate from the C. B. D.; to the southwest, northwest and north. Each has problems which are caused by a combination of poor alignment, restrictive street widths and traffic types.

1. Southwest Radial — Bank Street (and The Truman-Jay Street Connection)

Bank Street traffic volumes exceed the street's capacity during both A.M. and P.M. peak hours. Intersections along Bank between Truman and Colman Streets are congested continually. A review of Plate 4 shows the heavy volumes of north-south traffic which cut across Bank Street.

Because of the offset intersections, much of the cross traffic movement requires more signal time than would ordinarily be allotted. Thus, Bank Street traffic builds up and flow is hampered. For example, it takes about 6 minutes to travel to the Waterford line from the C. B. D. along Bank Street (a distance of a mile and a quarter) during an average peak period (See Plate 7).

Parking and parking movements on both sides of Bank between Howard and State Streets contribute substantially to congestion. Particularly, during periods of heavy movement, some restrictions should be considered. It is difficult enough to have two lanes of moving vehicles while parking is allowed on both sides of this street. When parking maneuvers take place, long back-ups occur.

The importance of smooth traffic flow on Bank Street cannot be overemphasized. Bank Street functions as a major distributor for local traffic and as a through artery to Waterford. To continue in this dual role effectively, major changes are required from State Street to Colman Street. No alternate artery is available.

2. Northwest Radial — State and Broad Streets

State and Broad Streets travel northwest with heavy traffic volumes. State Street, with parking on both sides of the street, does not permit a smooth flow of traffic in the commercial-retail area where convenient movement is highly desirable. Broad is congested at two key intersections with Williams and Huntington Streets.

"Court House Square" at the top of State Street has been a constant traffic problem for years. Recently a plan was developed which along with urban renewal at adjacent areas would eliminate problems at this location.[7] Plans for remedial steps are shown elsewhere in the report.

Near the northwest part of the City, traffic volumes on Broad Street do not exceed its capacity. Alternate access is available via I-95 which parallels Broad Street until Broad approaches the C. B. D. Broad Street traffic continues to increase as it approaches the C.B. D., but with little congestion. Minor remedies will be suggested to increase the street's effectiveness; however, no outstanding problems have been evidenced.

Recommendations regarding State Street will have a major affect upon Broad Street where the two streets meet at "Court House Square." Improvement of conditions at the square will help the lower end of Broad Street materially.

3. North Radial — Williams Street, Mohegan Avenue

Williams Street is the key artery dispersing traffic to and from the north. Both Main and Huntington play similar roles, of a lesser magnitude. Where these three arteries focus near the interchange with Route U. S. 1 and I-95, the City experiences its most aggravating traffic problems. As mentioned previously, redesign of the entire interchange is underway by the State Highway Department.

North of the highway interchange Williams intersects with Mohegan Avenue (Route 32) and this forms the major northern access to and from the City. Mohegan is a divided roadway with openings in the center mall for turning movements. The construction of a new highway interchange will extend somewhat beyond where Mohegan, Williams and Crystal join together eliminating current problems in this area.

Between the interchange and Broad Street, Williams Street experiences minor traffic delays which are primarily the result of the intersection at Broad Street. Remedial steps are planned to reduce traffic problems at that point.

Problems Elsewhere

South of Bank Street, New London's traffic circulation, with few exceptions, may be termed satisfactory to good. One exception can be expressed as a major concern while all others would be classified as relatively minor in comparison. The major problem is with access to and from the Fort Trumbull area and its immediate surroundings.

Fort Trumbull Access

Traffic movements are generated by three major existing land use types in the Fort Trumbull area: (1) by residential development, (2) by City departments (municipal incineration and waste disposal), and (3) by Federal, industrial land use.

Plate 6 shows the location of problem spots adjacent to the New York, New Haven and Hartford Railroad embankment which literally cuts off Fort Trumbull from other parts of the community.

Travel to and from the area is inconvenient and over poor facilities. The bridges carrying the New York, New Haven and Hartford Railroad over local streets are old and incapable of providing safe, convenient access.

In fact, there is only one structure with sufficient vertical clearance for trucks to pass under (the Pequot Avenue - Howard Street underpass). The following dimensions of the three bridge openings illustrate the serious situation:

1. Hamilton Street underpass

   Roadway width; one side 11'-6", the other 8'-0".

   Vertical clearances; both sides 8'0".

2. Walbach Street underpass

   Roadway width; two lanes 28'-0". Vertical clearance; 11'-0".

3. Pequot Avenue - Howard Street underpass

   Roadway width; four lanes 48'-0". Vertical clearance; 13'-0".

The Hamilton Street bridge is entirely inadequate for the demands of today's roadway traffic. Along with its inadequate geometrics, it is a long tunnel type structure without sufficient lighting and is a safety hazard to the community.

For some time the U. S. Corps of Engineers has been studying and analyzing the development of flood control projects (dikes) as protection against future salt water flooding for protection of Shaw's Cove and adjacent inland areas, is now in the final stages of preliminary design (See Plate 3).

Concurrent with the Corps' program, the City suggested the possible development of a roadway atop the dike and then along the waterfront to the vicinity of State Street. Such a roadway, it was stated, would (1) provide excellent access to a half-mile stretch of waterfront, and (2) provide badly needed access to the Fort Trumbull area of the City. It is obvious that satisfying the two reasons would result in many advantages such as reduction of traffic along Howard and Shaw Streets (especially where they intersect Bank Street), open the waterfront to development and provide development incentive in the Fort Trumbull area.

Results of an interim feasibility study indicated that the proposal was sound and, perhaps, an excellent means with which to make a major change in north-south travel patterns in this section of the City.

Traffic counts and analysis strongly pointed to the merits of a dike roadway. About 3,500 vehicle trips per day were recorded in and out of the area which bore testimony to the heavy travel volumes anticipated by many people. Projections of traffic based upon a changed land use pattern, through the vehicle of urban renewal, confirms the need as suggested.

On Pequot Avenue, just south of the Pequot - Howard - Shaw Underpass, there are about 4,800 vehicles per day (AADT). A goodly number of the vehicles at this location would utilize a different traffic pattern if a dike road were constructed. Two reasons for this shift are: (1) congestion during peak hour travel, and (2) many travel to and from north of New London's C. B. D. and to and from across the Thames River which travel would be made easy by a new road over the dike.

In the area of Fort Trumbull — west of the railroad about 1,500 of the 4,800 trips along the nearby portion of Pequot Avenue would be affected by a new dike road. These are vehicles which currently use the Howard Street underpass, but would use a new road if it were available.

Central Business District

Examination of Plate 6 shows that almost all streets within the downtown area have been marked for major and minor traffic problems. Gross changes will take place in the future to eliminate most, if not all of the problems.

The Winthrop Urban Renewal Project and a GNRP, which are located and shown on Plate 3, will provide opportunity to sweep away traffic problems including numerous intersection difficulties which exist in this segment of the City. Generally, the problems can be summarized as follows:

a) Narrow streets, with or without parking.
b) Poor intersection alignment.
c) Uncoordinated traffic signal timing.

An entirely new street network has been developed (see section Proposed Transportation System) which will do away with all three elements cited above.

Jefferson Avenue - Colman Street

A review of Plate 6 will show that Jefferson and Colman have been marked for major and minor traffic flow restrictions. Both streets play important roles as collectors and major thoroughfares. Unfortunately, in their current circumstances, neither is suitable for the dual purposes, nor will they be satisfactory to accommodate future traffic increases anticipated.

Major renovation (on both streets, between Bank - Elm Streets) to provide more capacity, including that for future traffic demands, would be prohibitive because of the need to acquire substantial adjacent developed property. Beyond Elm Street — to the north and northwest — steps can be taken to upgrade traffic service, some of which are noted elsewhere in the report. A one-way system has been recommended for both streets from where they intersect each other and all the way to Bank Street.

The north end of Colman from just south of Broad Street to I-95 will be treated differently. Here, certain turning movements will be altered, particularly in the vicinity of the shopping center which lies adjacent to I-95.

Bridges Over N.Y., N.H. and H. R.R.

The two structures which carry Ocean and Montauk Avenues over the main line of the N.Y., N.H. and H. R.R. are traffic problems. These bridges built during the 1890's are antiquated and not sufficiently wide to permit traffic to flow smoothly on either street.

Neither structure conforms with existing lateral clearance requirements set up by the Public Utilities Commission as recently as 1964. Width between curbs is much less than the width of adjacent travel lanes on each street. If the bridges were rebuilt two lanes of travel in each direction would be possible. During summer weekends when travel to Ocean Beach is heavy, both Ocean and Montauk Avenues become severely congested. Removal and replacement of the two structures would help solve part of the congestion problems.

Pequot Avenue

Until recent years, Pequot Avenue has not been a major traffic problem. On Plate 6 only a short segment has been designated for minor or major restrictions. Periodically, however, Pequot, a primary collector street, has traffic problems which are directly associated with the parking practice permitted.

The northern section of the street carries a moderate AADT (near 5,000) but is troublesome because of parking on one side of the street. Other segments of the roadway south of Green's Harbor Beach are also too narrow for parking and peak hour traffic loads. Serious consideration of parking restrictions during peak hour periods is recommended in addition to a widening of the right-of-way.

Because of the character and location of development, it was beyond the scope of this study to determine the locations of specific physical changes that might be required to accomplish a smooth alignment through the widening process. It will suffice that there appears to be sufficient space in several sections of the roadway to accomplish a modest increase in pavement width to 34 feet.

Ocean Beach Access

During summer months travel to Ocean Beach at the southern-most tip of the City causes traffic congestion at the ends of Ocean, Pequot and Montauk Avenues. Some of the short residential streets located in the beach area also feel the heavy traffic at such times.

Careful observations throughout the area and of the procedure at the entrance to the beach parking lot helped to pinpoint the major cause of traffic congestion. It appears to be in connection with the movement of vehicles into the parking area. Insufficient booths and booth operation slow traffic until it backs up all the way to the streets mentioned. Unless changes are made which will permit a more rapid entry into the parking area, congestion will continue.

The distribution of traffic movements over the present street pattern is not ideal. Adjustment, however, which emphasizes use of streets other than Neptune Avenue will be adverse to the character of development on those streets. We hesitate in suggesting a revised travel pattern for this reason.

Mass Transportation

New London is served by five bus companies providing local and long distance service. Bus passengers are accommodated from two conveniently located terminals, one of which is situated in close proximity to the rail terminal at the foot of State Street. Plate 8 shows bus transit coverage throughout the City.

Most local bus service is scheduled on thirty minute intervals. Examination of loading areas, passenger counts and statistical information indicates a satisfactory, convenient level of service.

Despite what appears to be good bus transit service and coverage acceptance by the public has been less than desirable. With few exceptions, bus commuter operations show light to moderate load factors. Uniform loading is characteristic for all hours of operation rather than the severe peak hour loadings exhibited in most cities, nationwide.

One explanation is that there are relatively few high traffic generators and that those which do exist, are not concentrated in any particular part of the community. Consequently, the mass transit system serves a broadly distributed mixture of land uses over a wide range in area, resulting in a more balanced spread of passenger loadings.

Bus operations serving other communities (Norwich, Quaker Hill and Niantic, for example) show higher passenger loadings during morning and afternoon commuting periods. Bus service to the Submarine Base in Groton receives heavy peak period loadings. Headways are more frequent with the number of buses doubled during commuting hours.

The Montauk Avenue bus route accommodates the heaviest loadings of those routes within the City. It serves Ocean Beach Park as well as other areas within the south portion of the community. During summer months, service is doubled reducing headway intervals to 15 minutes.

Over-all bus transit for commuting does not play as large a role in the journey-to-work trip pattern as in other urban areas. Since percentage of bus transit commutation varies widely, (8-30 percent) among numerous eastern seaboard communities, New London's percentage — estimated at less than 10 percent — is not alarmingly low; particularly not alarming, when viewed in the light of recent employment figures [8] which indicate about 65 percent of the work force is in non-manufacturing employment including retail trade, personal and related personal services, public administration, etc. Such employment is consistent with a widely scattered distribution of small to moderate size payrolls rather than with highly compact or concentrated employment centers with large employment.

Trends and Developments

Historically, New London has been the focal point and paramount commercial center in the Southeastern Connecticut Region. Sustaining this position was no problem prior to World War II when the City's high concentration of population and commercial activity were unrivaled. Slowly, since that period, however, changes have transpired, many of which have had and will continue to exert strong influence upon New London's future prominence.

While the center of population for the Region still lies proximate to the City,[9] a population migration to relatively undeveloped rural and suburban areas will result in greater numbers of people residing farther from the City's C.B.D. This development coupled with the growth of shopping centers throughout the Region (which usually are more easily accessible) threaten New London's share of the over-all commercial market, if not its leadership.

In addition to living pattern adjustment, the urban area is undergoing a number of changes related to employment location and land use development. Plates 2 and 3 show some of the major developments which exist and some of those proposed, which will have an affect upon New London.

Until recently, and in view of many years of change and growth, New London's network of streets and roads has remained static.

Aside from rehabilitation and repaving few important arteries, if any, had been developed concomitant with more intense development within or adjacent to the City. Where it was once very easy and convenient to travel into the City and downtown, it has become increasingly difficult in recent years.

Development of a new bridge across the Thames River and an improved interchange between I-95 and Route 32 by the State, will greatly increase accessibility from external sources. New London must, however, meet these changes with a vastly improved network of streets and roads to offer mobility consistent with these efforts.

Major developments by the State are based upon studies and traffic projections to the year 1990. We have examined a number of elements and parameters directly related to traffic for the same time period. In this manner, basic data, traffic projections and design elements would be more easily appraised and correlated.

Inventory of existing traffic flows, street and intersection capacities, land use study and examination of traffic interferences has formed the basis for developing the analysis of existing needs and requirements. The trends and development of population, land use, employment, retail trade and motor vehicle travel and registration provide source data with which projections can be extracted to depict and portray future needs and requirements. Each, together with less prominent factors, is related to vehicular travel and travel patterns. The following paragraphs discuss the various elements which were considered in the development of the 1990 or future traffic picture for New London.

Population

While New London has the smallest land area of any town in the Southeastern Connecticut Region, its estimated present population of 33,300 is the third highest in the region. However, while the region has boasted a 62 percent increase in population in the past 25 years, New London had a modest increase of 9 percent for the same period (See Graph 2).[10] The low increase is primarily due to the highly developed nature of the City where only 13 percent of its total land area is potentially developable. Much of the available land, however, is unsuited to residential development.

Replacement of existing single family dwellings with high-rise apartments in conjunction with current and future urban renewal projects will permit New London's population to steadily increase to an estimated 38,000 persons in 1990. While this represents an increase of 14 percent between 1965 and 1990, it is significantly less than the 46 percent increase in population projected for the Southeastern Region. The Region's present population of 193,000 is estimated to increase to 282,500 by 1990. A major portion of this increase will be in suburban towns[11] surrounding New London, and therefore convenient access should be developed to the City's C.B.D. and other traffic generators.

HIGH DENSITY AREAS

In 1960, New London's population density was at 5,603 persons per square mile. Due to a slight population decrease, it was somewhat lower in 1965. The highest density areas are found around the City's core, while the lowest are at extremities on the north and south sides of the community.

Characteristically, the highest densities are recorded in areas where traffic problems are most acute: (1) at or near the I-95, Rt. 32 interchange area and to the east, (2) south of State and west of Bank Streets, and (3) north and south of Bank Street near Shaw, Truman and West Coit Streets. It is significant to note that all three areas are within the boundaries of present and proposed urban renewal areas.

In each of the above instances, traffic problems will be dealt with on a large scale; some by the State and, others, locally. The scope and nature of remedial action is quite large and would appear to be beyond the economic resources of the City unless financial assistance is made available through other means.

Land Use

There are certain characteristic patterns which appear to govern urban traffic generated by various types of land use. Mostly, these patterns show similar relationships from city to city. Since they stem from dynamic parameters, however, variation between cities is not unusual. The rate that trips take place between pairs of places is subject to competition between areas of similar land use, and the interchange between areas tends to decrease with time and distance.

In development of a traffic modernization program, and for projection of conditions in the planning of future programs we have utilized basic land use information and are cognizant of the changes which will take place. Plate 9, 1990 Traffic Desire Lines reflect the various land use changes in and around New London. Originally developed by the State Highway Department, desire lines and traffic assignments for 1990 have been modified to incorporate recent and contemplated actions where future land use changes are significant.

The major land use changes which will affect travel patterns and volumes include massive redevelopment within New London, density of land use therein and residential and commercial land use changes in neighboring communities. Of paramount importance is the rapid growth and future expansion within Groton, including its commerce and retail trade.

Employment

Employment and distribution of large scale employment centers are vital factors relating to transportation needs and problems. When one considers that most urban areas are beset by the congestion caused during the primary journey-to-work hours (AM and PM), the importance of the influence of employment elements is easily understood.

Graph 1, Total Employment, shows two projections which are a composite analysis of data acquired from the Connecticut Labor Department, New London Area Chamber of Commerce, SCRPA and the Southeast Area Traffic Study (CSHD). Between 1965 and 1990 there is indicated a 29 percent increase in total employment for New London. The regional increase for a similar time period is estimated at 49 percent.

FLOW OF WORKERS

Early in the 1960's a study by SCRPA showed that New London furnished "in-city" employment for about 14,800 persons in 1960. Resident population employment had been gauged at about 11,500 persons. Further, additional studies and analyses disclosed that about 25 percent of the City's employed residents commuted to employment outside of New London. Results of calculations, therefore, reveal that about 6,200 persons commuted to New London daily, and represented about 42 percent of the "in-city" employment.

The preceding picture is representative of most, if not all, core areas, nationwide. The in-migration of employees to cities far outstrips the out-migration. In New London's case it points sharply to the close economic relationship between the City and surrounding areas and is a meaningful reflection of the importance of automotive mobility.

FUTURE EMPLOYMENT

The above statistics and distribution of employment were examined in the light of New London's future land use plan,[12] which plan differs markedly from existing land use in several major sections of the community.

In the more than 500 acres which includes the Winthrop Urban Renewal Project and a proposed G.N.R.P. (See Plate 3), intensity of land use and concentration of similar uses will be increased.

Present heterogeneous or "mixed land use" patterns will be diminished. For example, several areas will be devoted exclusively to industrial land use (Fort Trumbull and State Pier area), increasing the City's acreage from a present 85 acres to about 110 acres of industrial land. Many such changes were examined (for all types of employment) and provided the background for determination of the distribution of future work trips throughout the community.

Retail Trade

New London accounts for a large portion (about 35± percent) of the retail sales in the Southeastern Region. While large population increases in suburban towns will be supplemented with local commercial centers, New London can continue as the dominant retail center. Between 1965 and 1990 it is estimated that New London will exhibit about a 167 percent increase in retail sales, while the region will increase about 100 percent. New London's 1990 retail sales are expected to be near $267,000,000, which will be 50 percent of the region's $530,000,000 in sales, (See Graph 4).

The projections in Graph 4 are a synthesis of a number of estimates of future retail sales. These differ from other projections,[13] in that they forecast a more optimistic future for New London's retail trade market. Particularly significant, is the fact that we estimate New London's retail sales in 1990 to be about 50 percent of the Region's retail sales. Others predict a declining percentage of the Region's market for New London, notwithstanding the singular increases in each case.

As far as can be determined, there are two fundamental reasons for the differences in projections of the City's retail trade:

(1) Governmental and private development actions subsequent to the appraisal of economic conditions by others.

(2) Regional vs. sub-regional comparisons are not realistic because there is a distinct difference in competitive values used in each instance.

However, to maintain its dominant role in retail sales, New London must provide ample access and parking facilities as well as create a pleasant and aesthetic Central Business District. New London's retail sales may not increase by 167 percent as expected. While such an increase may be slightly optimistic, it will be used as one gauge for future transportation needs.

Current urban renewal programs are initiating development which will result in continually increasing retail sales and commerce. This accelerated increase in retail trade will be accompanied with more shopping, work and business trips. These trip categories constitute nearly half of all trips in the urban area and about 85 percent of the trips to the C.B.D.

Travel Characteristics

In recent years much information has been obtained from origin-destination and other traffic studies relating to trip generation, travel modes and urban travel in connection with urban development. For example, studies reveal a close relationship exists between car ownership, population density and mode of travel.

TRAVEL INVENTORY

In 1960 the Connecticut State Highway Department conducted O & D surveys in the Southeastern Region as part of the SEATS program of work. The survey consisted of roadside and home interviews. Coupled with these efforts were several other supplemental surveys and data gathering procedures. Many of the facts and data have been furnished to us for use in evaluating travel characteristics in New London.

In addition, supplemental surveys were conducted throughout this assignment to procure information which was not available, for checking existing data, and for up-dating other material considered obsolete. For example, intersection volume counts, time-delay studies, transit movements, parking duration, etc. were conducted over a four month period. The significant findings and analyses are related hereafter.

Motor Vehicles

Motor vehicle ownership and trip generation are related to economics, the size of a community, population density and mode of travel. The number of total person trips in automobiles decreases consistently with increasing concentration and decreasing car ownership, while the number of transit trips per capita increases in large cities.[14] Trip generation reflects the economic ability to travel, because car ownership depends largely on economic status.

Within cities where transit plays a minor role, automobile ownership and trip generation are generally higher than for those cities which have convenient, extensive transit systems. There are other reasons, to be sure, but they have less impact upon automobile ownership and usage.

TABLE 1

Incidence of Private Auto Ownership

(Persons Per Car)

Area	1945	1950	1955	1960	1965	1990
New London	4.9	3.9	3.5	3.3	3.1	2.6
Groton	4.7	4.1	3.6	3.3	3.0	2.6
Norwich	4.7	4.2	3.7	3.2	2.9	2.5
Waterford	4.5	3.1	2.5	2.7	2.3	2.2

Table 1 shows the historical development and 1990 prediction of the incidence of private auto ownership for New London and three neighboring communities. It is easily seen that the number of persons per car has been decreasing steadily and that the decrease is projected into the future. Specifically, during the period shown in the table the number of persons per car decreased about 37 percent.

Graph 3 shows the registration of motor vehicles within the City and the Southeast Region. Between 1945 and 1965 vehicle registration in New London increased 46 percent to a total of 12,800 registrations in 1965. During the same period, a 57 percent increase was experienced regionally.

Future Traffic

Since the four major activities of people are working, shopping, recreation and rest, any traffic projection must reflect the trends in land use and the socio-economic factors related to these activities. Trends in factors such as population, motor vehicles, retail sales and employment have been discussed. However, the four major activities provide an excellent opportunity to appraise travel habits and desires because they provide a reason for communication between people.

By categorizing motor vehicle travel by trip purpose; thus, the relative influence of land use and activities can be gauged and quantified. For example, studies show that in urban areas such as New London about 75 percent of all trips begin or end at home. Considering only the home based trips, they are generally distributed and vary as follows:

TABLE 2

Typical Distribution of Home Based Trips
New London, Connecticut

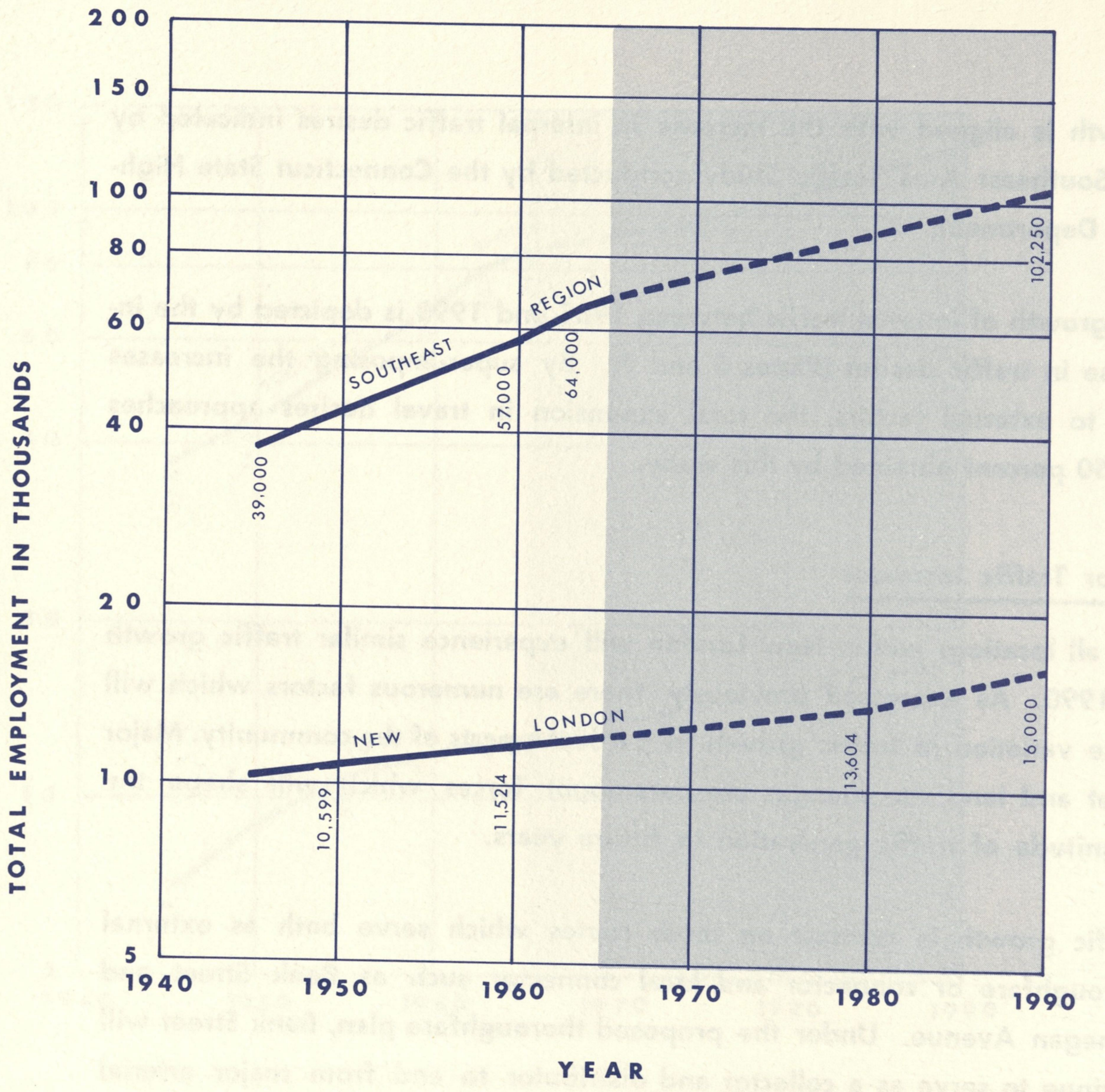
Trip Purpose	Percent Range
Work	33-36
Social & Recreational	18-22
Shopping	13-17
Business	10-13
School	6-10
Miscellaneous	10-12

The remaining 25 percent of trips which do not originate or terminate at home are primarily business and work oriented.

Many growth factors have provided the basis for determination of future traffic to the year 1990. Following are the more significant which have been itemized for easy reference.

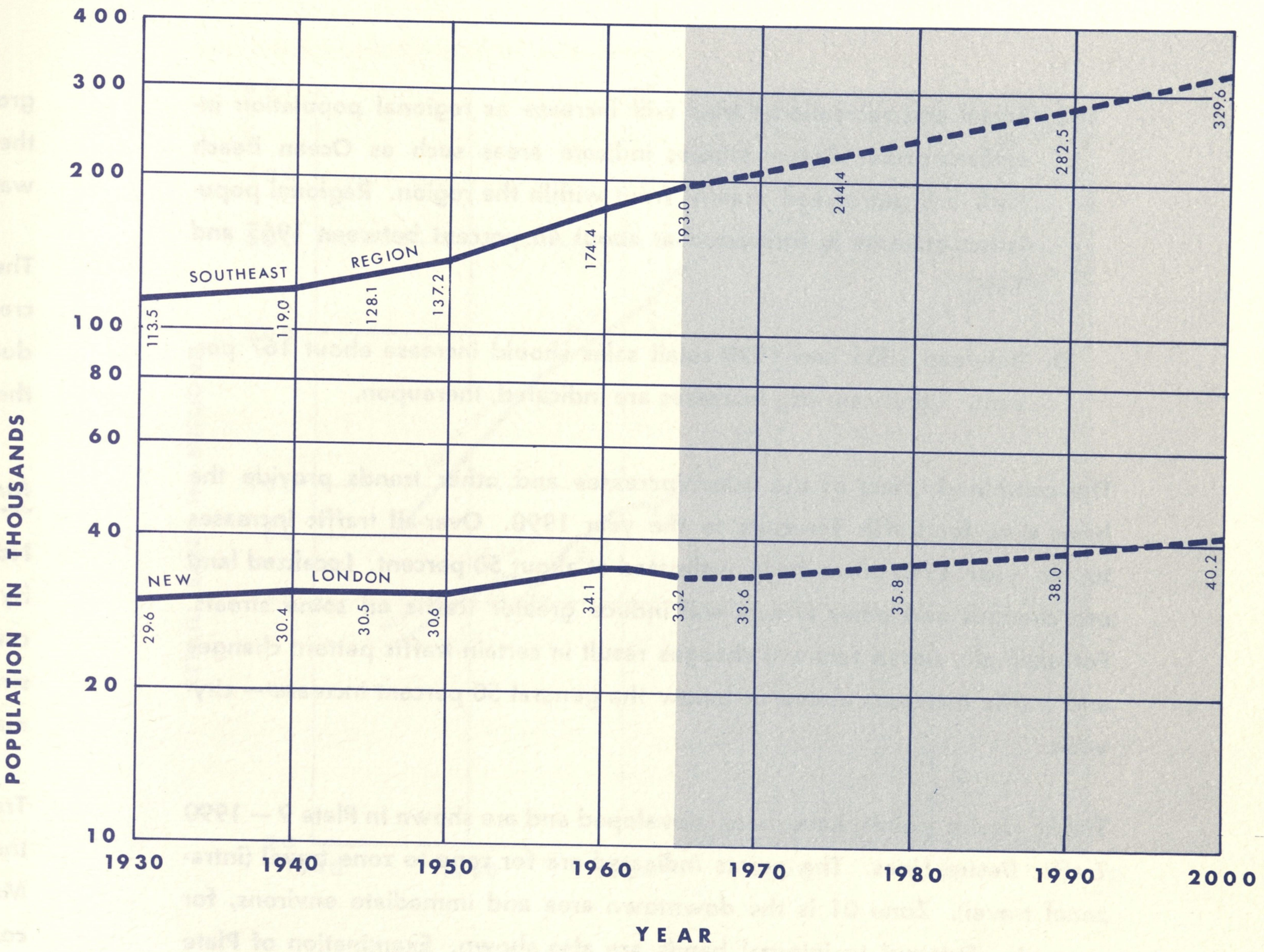
A. Home based trips will increase in some relation to a predicted 14 percent increase in population between 1965 and 1990.[15]

B. Future work trips will relate to an estimated increase of 23 percent in employment between 1965 and 1990.



TOTAL EMPLOYMENT

GRAPH 1



POPULATION GROWTH AND PROJECTION

GRAPH 2

C. Social and recreational trips will increase as regional population increases occur. Recent studies indicate areas such as Ocean Beach Park are patronized mainly from within the region. Regional population increase is forecasted at about 46 percent between 1965 and 1990.

D. Between 1965 and 1990 retail sales should increase about 167 percent. Significant trip increases are indicated, thereupon.

The combined effect of the listed increases and other trends provide the basic data for traffic forecasts to the year 1990. Over-all traffic increases to the year 1990 have been estimated at about 50 percent. Localized land use changes and other affects will induce greater traffic on some streets. For example, urban renewal changes result in certain traffic pattern changes and traffic increases above or below the general 50 percent increase — city-wide.

Traffic desire points have been developed and are shown in Plate 9 — 1990 Traffic Desire Lines. The points indicated are for zone to zone travel (intra-zonal travel). Zone 01 is the downtown area and immediate environs, for example. External to internal bands are also shown. Examination of Plate 9 and Plate 5 will show the differences in travel desires between the years 1965 and 1990.

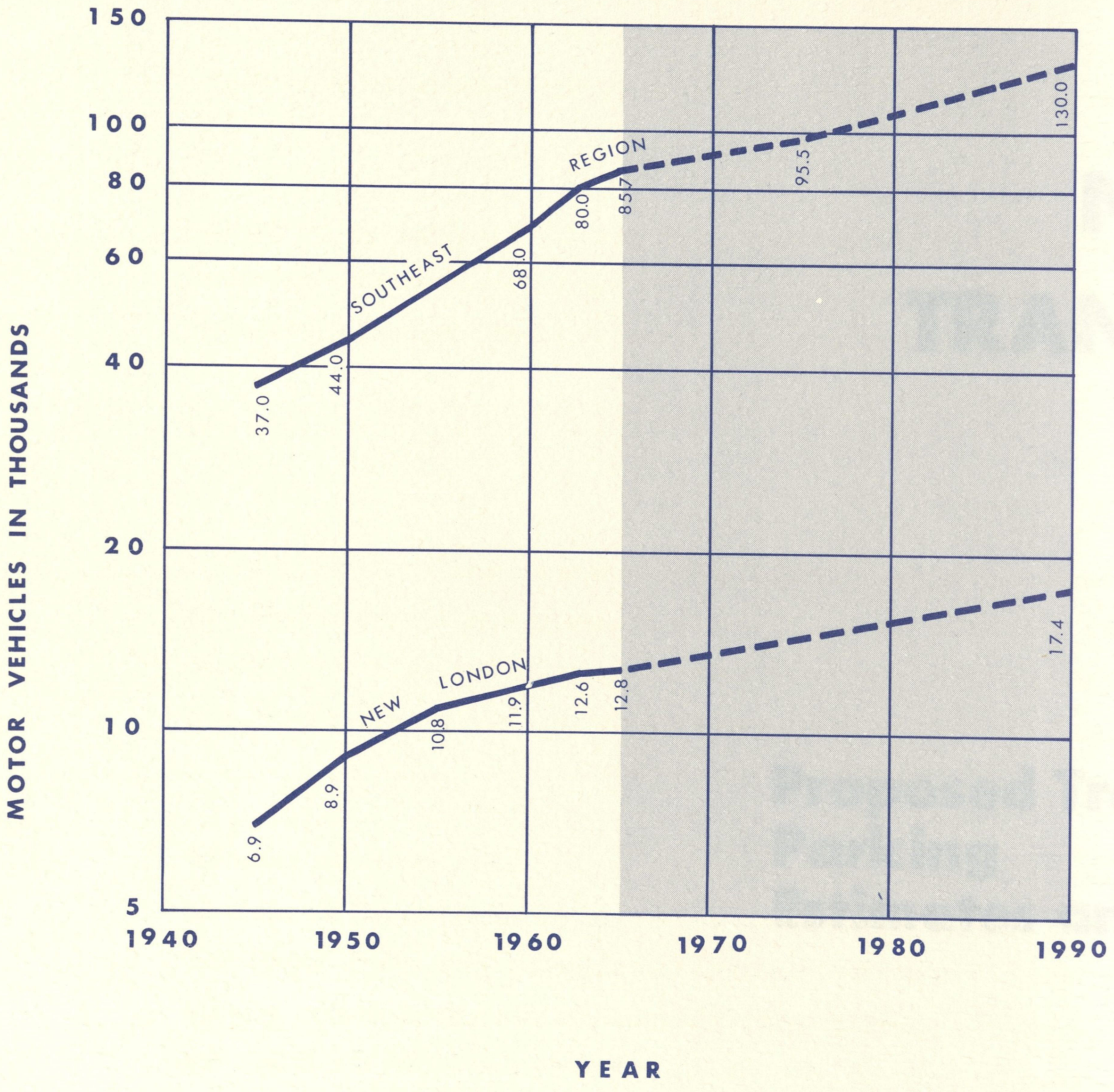
Based upon the 1990 travel desires, traffic assignment was made to the street system and is shown in Plate 10 — Average Daily Traffic Flows. Traffic growth is aligned with the increase in internal traffic desires indicated by the Southeast Area Traffic Study conducted by the Connecticut State Highway Department.

The growth of internal traffic between 1965 and 1990 is depicted by the increase in traffic desires (Plates 5 and 9). By super-imposing the increases due to external factors, the total expansion in travel desires approaches the 50 percent obtained by this study.

Major Traffic Increases

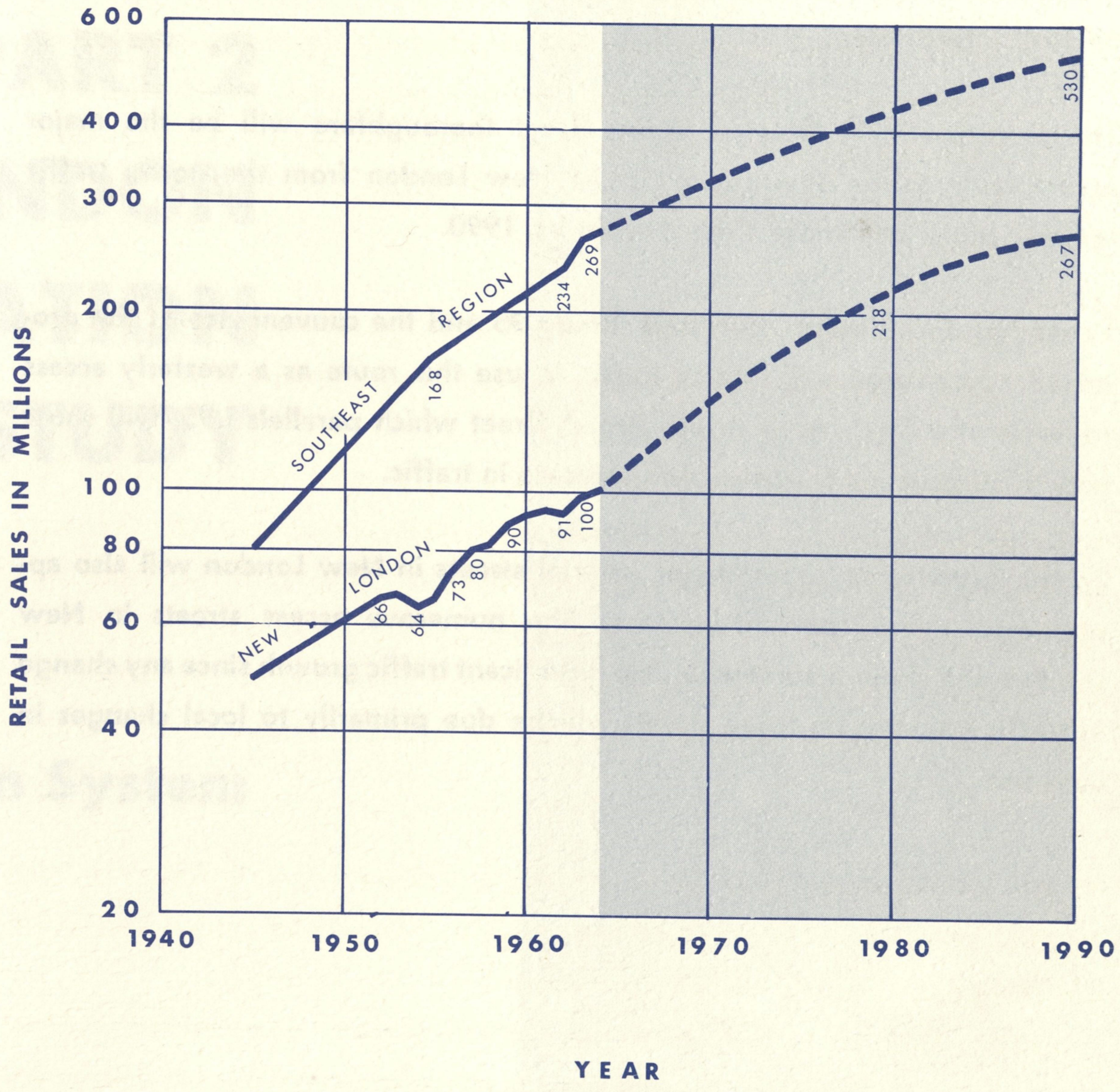
Not all locations within New London will experience similar traffic growth by 1990. As expressed previously, there are numerous factors which will cause variation in traffic growth in particular parts of the community. Major street and land use changes are paramount forces which will shape the magnitude of traffic generation in future years.

Traffic growth is greatest on those routes which serve both as external thoroughfare or connector and local connector such as Bank Street and Mohegan Avenue. Under the proposed thoroughfare plan, Bank Street will continue to serve as a collector and distributor to and from major arterial routes and its traffic volumes will double in the proximity of the C.B.D. by 1990. At its western terminus with Waterford, Bank Street traffic will increase by 75 percent. As the major access route to New London and Interstate Route 95 from the north, Mohegan Avenue will nearly triple its existing traffic volumes. Part of this increase will be due to significant increases



MOTOR VEHICLES

GRAPH 3



RETAIL SALES

GRAPH 4

brought about by expansion of the Gold Star Memorial Bridge and its connecting interchange.

The proposed Main Street — Water Street thoroughfare will be the major access route to the downtown area of New London from the north; traffic on this route will more than double by 1990.

Expanded facilities on Interstate Route 95 and the convenience of the proposed interchange will induce traffic to use this route as a westerly access route to the City. As a result, Broad Street which parallels I-95, will show only a 50 percent or reasonable increase in traffic.

Traffic growth on other major arterial streets in New London will also approximate this 50 percent increase. The numerous access streets in New London will show a somewhat less significant traffic growth since any change in traffic volumes on these streets will be due primarily to local changes in land use.

PART 2
NEW LONDON TRANSPORTATION STUDY

Proposed Transportation System
Parking
Estimates and Priorities

Proposed Transportation System

Traffic engineering planning might be defined as the application of traffic engineering procedures and techniques for the purpose of providing the best possible traffic facilities today, as well as in the years to come, for the use of the greatest number of people with the most efficient expenditure of funds.[16]

Previously, there have been two main reasons why cities have failed to plan comprehensively to meet their transportation needs: (1) Lack of funds for extensive capital improvements, and (2) Lack of essential facts. In recent years, fiscal burdens have been lifted by Federal Assistance Programs of one sort or another. As for factual handicap, this study is an excellent example of a sound means of approach to fact-gathering, study and analysis and, finally, recommendations toward a course of decision and action.

Need for Change

Progress and mobility are inseparable. Through history, the achievement of a better or advanced development of mankind has been correlated with better and more rapid communication between people. Progress and mobility's converse relationship has been more visible in New London, perhaps, than in other more stable and tranquil communities. Dynamic or major community changes have been traced to highway and rail travel, and commercial and governmental oriented waterborne transportation.

Until recently, little has been done to adjust or change ground transportation facilities to meet changing conditions and demands. Since the advent of the motor vehicle in reasonable numbers, no great changes were made in the initial highway and street network. More intense and new land use development only served to increase the burden of an old circulation system.

New London, however, is now at a point where change is required. In previous sections of this report, many factors or elements of social and economic significance were discussed in the light of transportation desires and needs. An obvious portent can be predicted unless major, meaningful changes take place. Fortunately, there are means at hand which will provide assistance to New London in making the prescribed changes and modifications which will enhance its future development.

Chief, among those avenues of assistance, is the Federal government's urban renewal program. Besides the opportunity to clear and adjust physical development, direct financial aid is available to reconstruct and rearrange archaic and inadequate circulation systems in the areas of renewal. Typically, adjustment is more urgently required in the renewal areas than elsewhere. New London is no exception. No less significant and helpful to New London is the State Highway Department's ambitious program to construct a new bridge across the Thames River and a major, advanced-type interchange between I-95 and Conn. Rt. 32. New and technically advanced local connections to and from these major roadways will furnish improved access and egress to the heart of the City and its immediate surroundings.

Thus, the opportunity is available for the City to act in its own behalf and coordinate the new developments with other modifications to develop a comprehensive, up-dated circulation system which will remove present inadequacies and provide for continued growth in the years ahead.

The proposed transportation system which follows will be an integral part of future land use development within New London. Since transportation itself is a major form of land use, its effectiveness will in great measure assure the effectiveness of the over-all land use plan.

The Over-All Plan

Before any modifications to New London's existing street system were developed, it was necessary to formulate a long range plan of needs and requirements. Future needs have been based upon the many socio-economic trends previously discussed and upon the City's future land use plan. Too, the Southeastern Connecticut Region has been considered because it will have an increasingly expanded affect upon New London's living and travel habits and the use of its transportation system.

The year 1990 (25 years from the start of this study) was selected as a convenient point at which to focus future planning. A number of reasons dictate this decision:

1) All urban renewal projects will have been completed during the 25 year period.

2) It is difficult to justify economic or physical planning beyond a 25 year period.

3) Highway Department statistics and figures are geared to the year 1990.

Plate 10 shows the Average Daily Traffic expected on major arteries in New London in the year 1990. Plate 11 compares the 1990 traffic volumes with the existing street capacities in and around the City's C.B.D.

Examination of Plate 11 shows deficient capacity will exist on key streets unless dramatic changes take place. Actually, a number of streets do have capacity deficiencies at present. 1965 traffic volumes are shown on Plate 4. Plate 12, Index Plan of Street Improvements shows the full extent of modifications and changes recommended — major and minor renovations as well as new construction, city - wide. It is readily apparent that most of the major changes will take place in and around the C.B.D. which are compatible with deficiencies shown on Plate 11.

Plates 13 through 18 show the details of recommended street adjustments and new work at a scale of one inch equals 200 feet. All new work layouts have been checked out for physical feasibility. Dimensional accuracy, of course, was limited by the extent of existing data which was available.

MAJOR IMPROVEMENTS

Bank Street — Main Street

A major divided thoroughfare is planned for the heavily traveled Main Street - Bank Street corridor. These streets continue as the major access route to downtown New London (See Plates 13 and 14). A boulevard is planned with three travel lanes in each direction to accommodate anticipated average daily traffic from between 21,000 and 29,000 vehicles per day.

The proposed thoroughfare will follow the existing location of Bank Street between Ocean Avenue and Tilley Street where it will split to form directional roadways as it sweeps through the downtown area. The separated roadways and rearranged intersection locations will facilitate traffic movements in the intensely traveled downtown area by eliminating haphazard cross movements and the normal conflict of opposing traffic flows. Strategically located intersections will eliminate many conflicting cross movements and permit an optimum arrangement and timing of traffic control devices.

The two one-way roadways will merge to form a divided boulevard north of Church Street and will extend into the I-95, Rt. 32 connector proposed by the Connecticut State Highway Department, near Crystal Avenue.

Urban renewal provides the vehicle with which to accomplish such a major undertaking as suggested. Truthfully, access to and from the west in future years (as well as currently) would be crippling if this possibility were not available. This vital mid-section of the Community is slowly being strangled and a large expenditure is required to implement an improvement.

Church Street

A divided boulevard is proposed for Church Street which links the Main Street - Bank Street complex with Broad Street and the Court House Square area. A boulevard will provide greatly needed access between the East and West fringes of the C.B.D. It is an ideal location for a major East-West Boulevard since it provides peripheral access to the core of the C.B.D. and does not conflict with pedestrian movements. Further, it blends well with New London's renewal plans since it acts as a feeder street to proposed parking facilities in this area. Finally, this link is vital in the creation of a proposed pedestrian mall on State Street since it permits the circumvention of State Street on the north, as other streets will, to the south.

Federal Street

As part of the Winthrop Urban Renewal Project, the section of Federal Street between Main and Union Streets will be abandoned. Thus, Federal Street will only function as an access and service street to adjacent development.

Tilley Street

Another boulevard is proposed for Tilley Street. Together with Church Street, these form a street network encircling the downtown area. The proposed boulevard will utilize the existing location of Tilley Street and connect Huntington Street and the proposed Bank Street. Hence, a loop will be completed around New London's C.B.D. formed by Huntington Street, Church Street and the Main Street - Bank Street thoroughfare.

Tilley Street is also suggested as the major access route to a proposed dike roadway. Several alternate possibilities are available as indicated on Plates 12 and 13. Preference, however, is for Tilley Street to connect directly with the north end of a dike roadway because: (1) it is direct access and egress to the south periphery of the C.B.D., (2) intersecting movements at Bank Street are easily arranged, and (3) the future closure of State Street will be facilitated. Ramp arrangements, as shown on Plates 12 and 13, are costly and are not warranted at this time. It is possible, though, that future developments (5-10 years, hence) and the need for a railroad grade separation will require bridging the N.Y.N.H. and H.RR. with a modified alignment.

One more item must be given future consideration. As plans for renewal progress in the near future, land use spatial and density arrangements may dictate the ultimate decision regarding the functional design of the complex intersection. In summary, the proposed plans are quite satisfactory under prevailing circumstances.

Hempstead Street

Hempstead Street should be extended southerly to form an intersection with Bank Street and Howard Street.

This will elevate Hempstead Street to the role of a major collector street between Broad Street and Bank Street. It will form a part of the circumferential street network around the C.B.D.

Washington Street

A short extension of Washington Street will allow it to serve as a feeder street onto Hempstead Street. It will eliminate the existing circuitous route to Bank Street. The section of Washington Street between Methodist Street and Tilley Street should be widened to eliminate the traffic flow restrictions.

Truman Street - Jay Street Realignment

A slight realignment is proposed for Jay Street which will flatten the curve that exists between Franklin Street and

Huntington Street. This modificaion is necessary for smooth and safe traffic movements on Jay Street.

Truman Street should also be realigned to form an extension of Jay Street with its termination at Blackhall Street Extension. These slight alterations will allow these two streets to function as a major connection between Huntington Street and Bank Street. As such, it will handle the heavy volumes of traffic which desire to by-pass the downtown area and also serve as a major access route to the downtown area.

Blackhall Street Extension

Blackhall Street is a major link in the route between Williams Street and Bank Street. By extending Blackhall Street to Bank Street, it will form a direct route between these streets and also provide a terminal point for Truman Street.

Williams Street Extension

The connection between Williams Street and Bank Street will be further improved by extending Williams Street from its junction with Blackhall Street to Montauk Avenue. This will provide uninterrupted traffic flow on Williams Street and forms a well aligned intersection with Bank Street and Montauk Avenue.

Jefferson Avenue

Jefferson Avenue is a major North-South artery along New London's western boundary, but its termination at Bank Street is not aligned with Ocean or Montauk Avenues. To eliminate the conflicting movements at the Bank Street intersection, Jefferson Avenue should be aligned with Ocean Avenue. To balance the heavy traffic flows on Colman Street and Jefferson Avenue, these streets should be converted to one-way operation between Bank Street and their intersection.

Jefferson Avenue would provide one-way northerly operation and Colman Street would be its southerly complement.

Colman Street

The heavy traffic volumes utilizing Colman Street and Lee Avenue as a north-south route are hindered by this offset intersection at Bank Street. The traffic flow on Bank Street is also restricted by this intersection. Colman Street and Lee Avenue should be restricted to one-way traffic flow to the south, and traffic islands should be added for alignment purposes. These alterations will minimize the time required for vehicles to cross Bank Street (See Plate 20).

The one-way pair formed by Colman Street and Jefferson Avenue will eliminate the many intersectional conflicts and increase the traffic carrying capacity of the streets.

Colman Street between Broad Street and Norwood Avenue is problematical in the late afternoons. Shopping center traffic making left turns a short distance from the intersection at Vauxhall Street are a large part of the problem.

Elimination of the left turn off of Colman into the shopping center is suggested along with a widening of Colman Street between Broad and Vauxhall, on the east side. Widening will permit two lanes of travel northbound and provide sufficient space for a left turn movement at the intersection of Colman and Vauxhall (Location B, Plate 12).

The City's Director of Public Works and Purcell Associates presented the Connecticut State Highway Department with a proposal to develop or extend Colman Street north of its terminal location at I-95. The State's original plans required a ramp terminal for I-95 traffic eminating on Colman Street. It was proposed to the State that Colman Street should be continued to Bayonet Street providing much needed access to this rapidly developing section of New London. Other advantages such as reducing some traffic loads at Briggs Street and the I-95, Rt. 32 interchange were recognized since the State indicates agreement in making the change (See Plates 12 and 16).

Shaw Street

The section of Shaw Street between Bank Street and Hamilton Street would be relocated in an alignment with the proposed Blackhall Street Extension. In this location it will parallel Montauk Avenue and Howard Street and form nearly rectangular blocks. Shaw Street will be terminated at its intersection with Ann Street, thereby eliminating its use as a major through street. This function should be restricted to Montauk Avenue and Howard Street which have been designated major thoroughfares.

Howard Street

This street will follow its existing alignment between Bank Street and Hamilton Street, but its southerly extremities will be relocated to the west of its present location. Parcels of property will be provided with usable frontage along the railroad. More important will be the improved alignment with the existing railroad bridges.

As part of these modifications, it is necessary to realign the Trumbull Street and Walbach Street approaches to these bridges, and also to extend Pequot Avenue parallel to the railroad on the east side.

A railroad underpass is included in the modifications for this area which will function as an extension of Maple Avenue. It will allow the existing structure at Trumbull Street to handle two-way traffic with the Walbach Street underpass one-way westbound, and Maple Street one-way eastbound. By extending Pequot Avenue northerly, it will serve as the approach to the proposed dike roadway.

Montauk Avenue Railroad Bridge

The existing railroad bridge on Montauk Avenue forms a constriction in this avenue and restricts the smooth and safe flow of traffic. This structure is antiquated and in addition to the traffic requirements, it should be replaced due to its age. Montauk Avenue is a major north-south artery and is restricted at this location only.

Ocean Avenue Railroad Bridge

This structure is in need of replacement for the same reasons as the Montauk Avenue Bridge.

HURRICANE DIKE ROADWAY

In the Spring of 1966 a separate report was submitted to the Planning Board which affirms the traffic and physical feasibilities of a proposed roadway to be constructed on top of the hurricane dike planned by the U.S. Corps of Engineers.[17] The flood barrier located at the entrance to Shaw's Cove (See Plates 3 and 13), will be constructed in the near future which necessitated an early answer regarding a roadway on top of the dike (barrier) and the need for a movable bridge to maintain a waterway opening into the Cove.

Traffic and land use analysis were performed as described in a previous section of this report. Perhaps, at this point, it may be appropriate to briefly explain the reasoning leading to the affirmative conclusions since the results bear more heavily upon a future situation than that which exists.

Changes in the Fort Trumbull Area

More intensive and rearranged land uses will be prominent in the "Fort" and adjacent areas. Urban renewal will be the vehicle for changes and development which will take place.[18] Through urban renewal, deteriorated and blighted areas in and around the "Fort" will be cleared. The cleared land may then be used for other purposes, not necessarily for residential reuse. Higher density (greater concentration of people) but with more open areas, can be predicted. Regardless of the reuse type, land use characteristics such as density, location and distribution of access will be altered. The alteration will be more attractive and generally will generate more vehicular movement to and from the area. This movement, however, will be better oriented, better controlled and will travel over better streets and roadways (See Plate 12).

Traffic Feasibility

Traffic and projected usage analysis strongly supports the need for a road over the proposed dike along the waterfront. Figures indicate that a two-lane roadway, with shoulders, would provide sufficient roadway capacity to pass traffic smoothly. Peak-hour volumes would be about 650 vehicles (12% of AADT) with about 360 vehicles per hour in the heaviest direction of travel (55-45% split in direction). More detailed analysis was presented in Part I (Fort Trumbull Access) of this report.

To comply with City legal requirements, a 50 foot width at top of dike would be sufficient. A 24 foot roadway with 8 foot shoulders on either side would be entirely adequate. Sidewalks can also be provided and an esplanade developed near the bridge. This treatment would develop cultural and aesthetic appeal which is now lacking along the waterfront.

Physical Feasibility

Physical feasibility is not questionable. To include a roadway over the dike it is only necessary to widen the dike embankment and align its termini in positions advantageous for vehicular travel. Vehicle load characteristics are not factors in the design. The embankment will be constructed with sufficient stability and structural soundness so that superimposed wheel loadings will not necessitate unusual or supplementary construction techniques and cost.

A bascule bridge span will be required at the presently planned gate location. The bridge and gate will be integral structures for economical treatment. In this case, the foundation treatment will be altered to secure a substructure which will support the superstructure of a bascule type bridge. This will be a single leaf bascule with a span commensurate with that planned by the U.S. Corps of Engineers for passage of waterborne craft into and out of the Cove.

Undesirable Result

If the dike road is not constructed, Shaw and Howard Streets will have to be treated differently. Each will cost more to satisfy the additional traffic requirements. The elimination of a dike road would alter the character of Shaw Street in the future. It could not be utilized as only a collector street, as now planned, but would have to extend through to connect with Pequot Avenue and Bank Street. This is undesirable from the standpoint of new land use and traffic circulation. We do not recommend that it be done.

State Street

Future development of State Street is a key part of the City's over-all traffic plan. Treatment of State Street is interwoven with urban renewal and the commercial aspects of New London's total economic base. Hence, no realistic transportation plan can be proposed which does not emphasize a more positive and prominent utilization of this artery than has been the case in the past. Its function must be enhanced to maintain an integrated C.B.D. attractive to pedestrian as well as motorist, and to commerce as well as retail trade. State Street as it now exists cannot accommodate future pedestrian and vehicular traffic which will be moving through its intersections and along its right-of-way. It has difficulty, now, providing for peak-hour travel and parking which is permitted along both sides of the street. Sufficient space for widening is non-existent; left turn slots and additional travel way width cannot be constructed. Removal of parking would be damaging since there is a shortage of convenient, adequate parking presently.

Once again, solutions to the State Street problems were found partly in the area of urban renewal. Renewal would assist in being able to make a number of other changes possible which would provide a means of adjusting the function and ultimate use of the C.B.D.'s main artery.

The other changes possible through renewal would be (1) a revised street pattern, and (2) more, badly needed parking — conveniently located. Because of the time which will transpire, however, we have suggested a series of changes to take place over a period of perhaps five to ten years. Ultimately, there are to be three stages in the development of State Street (Plate 19). Exact time in terms of specific years is unimportant. More important are the three stages of change which should be as follows:

STAGE 1 — To be inaugurated at completion of the Winthrop Urban Renewal Project. State Street will be two - way east of Main Street and one - way (westbound) West of Main Street.

STAGE 2 — After extension of Main Street south of State Street in another urban renewal project. Shut off vehicular traffic on State Street east of Main Street. Develop this segment of State Street as a pedestrian mall and continue one-way traffic westbound on State Street west of Main Street.

STAGE 3 — To take effect when urban renewal south of State Street has advanced with development and parking plans. State Street will be closed to vehicular traffic for its full length.

The preceding successive changes in State Street will eventually provide a pedestrian mall in the heart of New London's C.B.D. With Church and Tilley Streets as major downtown access and egress, the C.B.D. will become an integrated unit having unparalleled peripheral circulation.

If State Street does become a mall, as recommended, it would mean 1,800 feet of unobstructed view from Court House Square to the Thames River. Only intermittent cross street traffic would appear occasionally. Pedestrian movement will be enhanced and an attractive, cohesive shopping development created on both sides of State Street. Parking and vehicular movement would take place on peripheral streets on all sides of the C.B.D.

Pequot — Shaw — Howard Area

The Pequot Avenue underpass and adjoining street system is inadequate to accommodate future traffic flows. Traffic problems occur even now during peak-hours of travel. The existing railroad underpasses on Pequot Avenue and Walbach Street have adequate width, but are not fully utilized due to the poor alignment with other streets. By relocating Howard Street and Pequot Avenue away from the railroad as shown on Plates 12 and 15, a better more easily traveled alignment with the existing underpass will result. Relocation of Howard Street in the intersectional area at Willetts Avenue is indicated by the dashed lines and illustrates the significantly improved alignment over the existing right-angled jog.

Maple Avenue

By the addition of a railroad crossing at Maple Avenue, all restrictions to traffic flow will be removed and a desirous circulation pattern created. It will then be possible to separate traffic at the railroad crossing to eastbound on Maple Avenue and westbound on Willetts Avenue. This traffic pattern will eliminate existing conflicting flows and provide more capacity for traffic volume increases in future years.

Connections to Conn. 85

Specific location of the extension of Conn. 85 south of I-95 into Waterford has not been made firm (See Plate 2). Its general location, however, parallel to the west boundary of the City is ideal for making several east-west connections with routes from New London. These connections would help to redistribute east-west traffic and lighten the burden now placed upon Bank Street.

Suggested points for connections are:

1. Extension of Glenwood Avenue westward.
2. Extension of Farmington Avenue westward.
3. Chester Street.

Interchange connections with Conn. 85 would be a particular asset during summer months when recreation travel to Ocean Beach Park is most heavy.

Main Street — Crystal Avenue

Extension of Conn. 32 into the heart of New London from its interchange with I-95 has been a major highway design problem. A multiplicity of ramp and local street movements has required an extensive period of design and adjustment to satisfy State Highway and local administrators.

Ramp connections from Conn. 32 to Main and Water Streets have been difficult in the area of Crystal Avenue. To accomplish the necessary traffic movements, the State Highway Department will relocate Crystal Avenue and Main Street between Crystal Avenue and Mill Street. These arrangements are not shown since final details have not been worked out completely.

OTHER IMPROVEMENTS

Numerous street and intersection improvements are necessary to facilitate traffic flow on New London's internal street network. These consist of channelization and alignment of intersections, and minor widening of streets.

Court House Square

Traffic islands should be added to this square to expedite traffic and pedestrian movements. Traffic signalization will be necessary for vehicle and pedestrian safety (See Plate 20).

Broad Street — Williams Street Intersection

A five foot widening of the northbound approach on Williams Street will provide two approach lanes on each leg of the intersection as shown on Plate 20.

Jefferson Avenue — Chester Street Intersection

Jefferson Avenue should be widened to 36 feet at Chester Street and the alignment improved by flattening the curvature. Traffic islands will channelize the various traffic movements and separate conflicts.

Jefferson Avenue and Chester Street serve as ingress-egress points for 13,000 vehicles per day. However, less than half of these have terminals in New London with the majority utilizing the Chester Street - Jefferson Avenue route for access to I-95 from Waterford. Concentration of traffic at the intersection of these streets overburdens the existing substandard facility. Intersectional approaches are narrow, poorly aligned and sight distance at this "stop" controlled intersection is restrictive on the free movement of vehicular traffic.

It is necessary to smoothen the curvature on Jefferson Avenue to obtain ample sight distance and to channelize the numerous turning movements by utilization of traffic islands (See Plates 18 and 20). The islands will separate turning movements and eliminate the interdependence of traffic flow which now exists. Installation of traffic signal controls will decrease the hazard to safety.

STREET WIDTHS

With the development of new streets of a variety of types, we have upgraded street and right-of-way widths in keeping with current acceptable practice. Many existing streets where only widening or intersection changes will take place are not included in the upgraded standards. In future years, however, it may be possible to alter substandard conditions when funds are available.

Plate 21 shows typical sections for major street changes, for downtown area streets, and for standard access (residential) streets.

In the case of street widenings, specific dimensions have not been shown for the widening since field instrument surveys are necessary for exact determination. Our view has been that where at least six feet of widening can be accomplished additional street traffic capacity will be achieved. For example, the upper end of Colman Street and Jefferson between Lincoln and Colman can be widened to improve traffic flow and achieve more capacity. Williams Street between Chappell and Broad can also be widened to facilitate better traffic circulation.

Pequot Avenue

Pequot Avenue, south of Maple Avenue, has capacity problems. Present parking policy has effectuated more fluid travel on this artery. It appears that further parking changes will not develop additional capacity to this street. The present right-of-way varies from 40 to 60 feet. It should be widened to a minimum of 60 feet for its entire length.

Huntington Street

From Washington to I-95, Huntington Street varies in width of right-of-way between 40 and 60 feet. It should be widened to a minimum of 60 feet and in areas of new development to 80 feet of right-of-way.

Ocean Avenue

Ocean Avenue south of Willetts Avenue has a variable right-of-way, mostly about 50 feet in width. This should be increased to sixty feet including the replacement of the antiquated, obsolete structure over the N.Y., N.H. and H. Railroad. When the structure is replaced, sidewalks on both sides should be included for pedestrian movement.

Williams Street

Together with Montauk Avenue, Williams Street will provide New London with the most direct north-south movement through the City's interior. As shown on Plates 12, 13 and 14, an extension of Williams is recommended between Bank and Blackhall Streets. This connection will develop an alternate route which circumvents the C.B.D. — urgently needed at this time.

From Blackhall Street north, widening of Williams Street will not be easily accomplished. Where possible, however, a minimum right-of-way of 60 feet is suggested.

Glenwood Avenue

Glenwood Avenue should be widened when and if it is connected to the extension of Route 85. Its present right-of-way should be increased to a minimum of 60 feet which will permit two lanes of travel in each direction.

Farmington Avenue — Plant Street

The second of three proposed connections with the Route 85 extension into Waterford, the Farmington - Plant route is ideal for an east-west crossing through New London and will help take some traffic burden off of the heavily loaded Bank Street. Farmington Avenue's right-of-way is satisfactory. Plant Street, however, should be widened to 60 feet.

Willetts Avenue

Willetts is a heavily traveled street, east-west. Its eastern terminus with Maple Avenue, however, has not functioned with a heavy traffic load because of the lack of a crossing at the N.Y., N.H. and H. Railroad. Previously, we recommended a new structure to carry the railroad over Maple Avenue which would provide direct access into Pequot Avenue and furnish better traffic circulation in the Pequot-Howard-Shaw area, near the railroad (See Plates 12 and 15). Willetts Avenue should be widened to 80 feet west of

Ocean Avenue, and Willetts and Maple Avenue to at least 60 feet, east of Ocean Avenue.

Garfield Avenue

An east-west collector street, Garfield connects three major north-south thoroughfares and provides excellent access to Williams Street from the west-central portion of the City. Its present right-of-way of 50 feet, east of Jefferson Avenue should be widened to 60 feet.

Connecticut Avenue

A detailed study was made in regard to the possible development of Connecticut Avenue as a major thoroughfare. For several reasons, this was abandoned; particularly because of the cost of widening between Broad and Vauxhall Streets. As a major thoroughfare, it would connect with the extension of Williams Street and continue on into Montauk Avenue (See Plates 12 and 14). We recommend a widened right-of-way but, frankly, we do not see how the City can afford to widen the narrow section (35 foot right-of-way) between Broad and Vauxhall Streets. At least 15 and preferably 25 additional feet are required. Without widening, of course, Connecticut Avenue will function as an inferior collector street.

Crystal Avenue — Main Street

Realignment of the intersection of Crystal Avenue and Main Street is being accomplished by the State Highway Department. In fact, Main Street between Crystal Avenue and Mill Street, will be realigned as suggested by the City's Public Works Director and will assist in the orderly arrangement of a fine circulation pattern near this critical part of the I-95, Rt. 32 interchange.

Chester Street

Chester now functions as an important collector street with much of its traffic eminating from Waterford. Previously, we proposed that it should be connected to the extension of Route 85. In addition to a connection with Route 85, the proposed high school site (at the intersection of Chester Street and Jefferson Avenue) will generate significant future increases in traffic volumes.

Elsewhere in this report, we discussed the needed improvement at the intersection of Chester and Jefferson. Beyond this, however, we recommend the widening of Chester Street to a minimum right-of-way of 80 feet.

It is our understanding that the State Highway Department and the City's Director of Public Works will collaborate on specific details for changes at the Chester-Jefferson intersection. The plan proposed in this report (See Plate 20) shows the minimum treatment which is desirable.

Mass Transit

New London, as previously discussed, is served by five bus companies on a local and nation-wide basis. Rail connections with the major cities on the East Coast is also available. Bus passengers are afforded service from two terminals, one ideally located in close proximity of the rail terminal on State Street. This allows transfer from one mode of transportation to another with a minimum of inconvenience (See Plate 8). Parking at these facilities is inadequate to provide attractive transfer, however.

The majority of the local bus service is scheduled at thirty minute intervals which provides convenient service. Due to New London's highly irregular street pattern, considerable duplication of routes occurs. Bus service is lacking in the Fort Trumbull area and the extreme northwest section of the City.

NORTHWEST QUADRANT

Recent and continued growth of this sector of the Community would indicate that serious consideration be given to initiating bus service in this part of the City. The more developed portion, south of I-95 should be serviced as well as the newly developing sections north of I-95.

New London and one or more of the common carriers should conduct a survey to determine potential passenger load and route characteristics in the very near future. It is our opinion that affirmative answers would be forthcoming should such a survey be undertaken.

Fort Trumbull Area

Similarly, little convenient service is available to and from Fort Trumbull. The large number of commuters indicates the possibility of special type bus service. A sample O-D survey (by questionnaire) would easily furnish data upon which decisions could be reached.

Based upon a sample survey, economic analysis would show whether a common carrier could provide service twice daily at a reasonable profit margin. Parking problems, while difficult, have not reached an acute stage. Bus service would forestall a demand for additional parking and relinquish certain existing parking space for future expansion.

Future industrial area expansion has been mentioned elsewhere in the report in connection with the proposed G.N.R.P. Any program involving bus operations should carefully consider future passenger load potential as well as existing conditions.

Parking

For many years now, the national trend has been toward increased dependence on the motor vehicle as a means of commutation. This has been particularly true in the smaller urban areas where mass transit coverage is sporadic and spotty, and access to the City's C.B.D. both from within the City and from the rapidly growing suburban areas must be provided by auto.

The vitality of the C.B.D.'s in smaller cities, such as New London, are difficult to support wholly by internal population. Peripheral and adjacent area population must be attracted from an ever-widening urban region. To attract visitors from these greater distances, it is necessary to provide convenient access routes to the C.B.D. and ample parking facilities within the area of commerce.

The completion of a modern arterial highway and other roadway changes recommended in this report will make the City's business establishments as easily accessible as the competing shopping centers in outlying areas. It is necessary, thus, to supplement this access with ample parking facilities at the trip termini in the C.B.D. Without sufficient parking facilities, economic activity within the core of New London will wane.

Indeed, it has been proven that shoppers who travel by auto purchase a greater abundance than those shoppers utilizing mass transit. While New London's downtown area constitutes only 14 percent of its total area, the sale of downtown type merchandise accounts for more than 30 percent of the City's total retail sales. The value of adequate parking facilities within close proximity of the C.B.D. cannot be overemphasized. Adequate parking must be provided to serve the various trip purposes to the C.B.D. such as for shopping, business, work and professional services. Hence, facilities must be oriented to the parker's needs based on trip purpose. Business and shopping trips are usually of short duration and constitute 60 percent of all trips to the C.B.D., while work trips comprise most of the long duration parking. Today, the differing nature of short and long duration parking dictates that consideration must be given to developing parking programs keyed to land use and thereby trip purpose.

Existing Parking Facilities

OFF STREET

New London (prior to urban renewal clearance) has 1,104 spaces or 76 percent of its parking in the C.B.D. in off street locations (See Plate 22).

These spaces are provided in municipal, commercial, customer, and private lots and commercial garages. The municipal lots provide 353 spaces or nearly one-third of the off street spaces in the C.B.D. Of these metered spaces, 222 are for parking with 3-4 hour limits while the remaining 131 spaces have a 10 hour limit. The 3-4 hour limit spaces are really not short-term, but many are used as such.

Commercial and customer lots provide 484 parking spaces or 44 percent of the off street spaces in the C.B.D. Additional commercial and customer lots exist in close proximity of the C.B.D. boundary, but these are useful on a long-term basis only.

The bulk of remaining spaces are provided by commercial garages which account for 200 spaces or nearly one-fifth of the off street spaces in the C.B.D.

Four-fifths of this off street parking is provided by lots. However, a number of the lots are far removed from the heart of the downtown area and do not cater to the important short-term parkers — shoppers and businessmen (See Plate 22). The high usage of streets at a distance from the C.B.D. during normal business hours is indicative of a deficiency of long-term parking.

The majority of off street parking facilities are on the fringe of the C.B.D. or otherwise undesirably located which greatly limits the coverage of each facility. Off street parking lots have been located at a distance from the core of the C.B.D. due to lower land costs and the availability of vacant land, not unlike what has happened in other communities. As a result, parking does not complement the other land uses, but is in some cases acting inimical to more intensified commercial use. The only parking within easy access to the businesses in the C.B.D. is that provided by on street parking. Nearly all of the off street parking facilities have access from the narrow side streets in the C.B.D. and this limits their convenience.

Approximately 68 percent of off street parking in the C.B.D. is provided by private enterprise, thereby indicating that business and other interests are aware of the necessity of convenient parking facilities.

ON STREET

There are 354 metered on street parking spaces in the C.B.D. which comprise 24 percent of its total spaces. While these on street facilities are of various time durations (ranging from 15 minutes to 4 hours), the majority are 2 hour metered spaces as shown on Plate 22.

The street parking spaces are distributed throughout the C.B.D. and many of these restrict traffic flow, particularly on the major arteries. New London's downtown streets are not wide; State, Main and Bank Streets are examples of crowded, congested arteries where on street parking is problematical both from a space standpoint and that of friction to smooth flowing traffic.

RATES

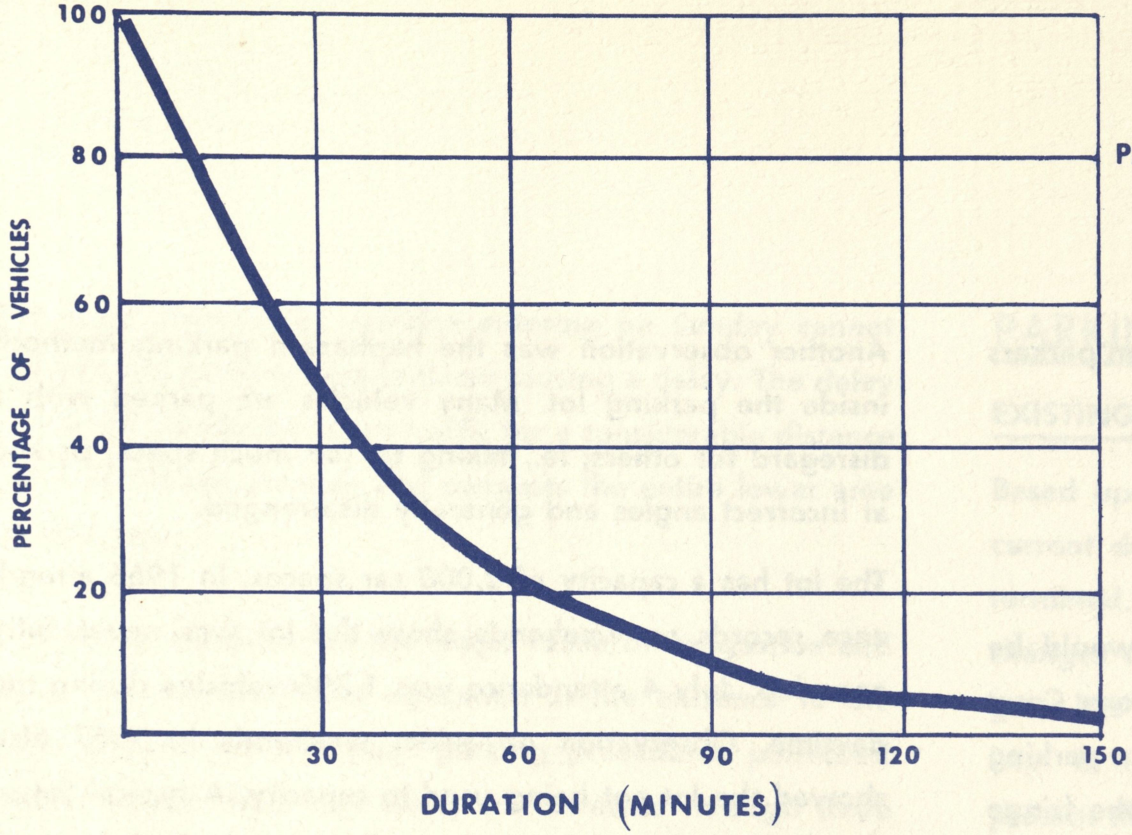
Parking fees within central city areas vary for several reasons. Two prominent reasons are trip purpose and the location of the parking facility. Parkers with shopping and business purposes (short-term) usually pay the highest hourly fees while workers pay significantly lower hourly rates, but higher over-all fees due to longer parking duration. Fees or rates are geared to attract either short or long-term parkers or various combinations of the two. Generally, parking rates decrease with increased distance from the core of the C.B.D. The numerous small parking lots in New London reflect immediate adjacent demands; thus, parking rates at each facility are aligned with the needs of proximate land uses. Parking rates at commercial parking lots in the C.B.D. range from a low of 50 cents per day to 25 cents per hour. The municipal parking lots have similar rates as the on street facilities. The three hour lot has a rate of 5 cents per hour while the long-term lot offers ten hours for 25 cents. While these rates could not be offered commercially, the relatively good usage of the facilities indicates they are an attractive complement to the commercial facilities in the C.B.D., despite their relatively remote location.

A variety of parking rates exist for the metered on street spaces in the C.B.D. Many of the rate differences reflect the partial replacement of older penny meters with nickel meters. The on street rates range from 15 minutes for 1 cent to 4 hours for 10 cents with numerous other rates interspersed. The majority of the street parking is in the 2 hour category with a 5 cent per hour fee. Usage and revenue figures indicate that the 5 cent per hour on street rate is well suited to the parking needs in the C.B.D.

USAGE

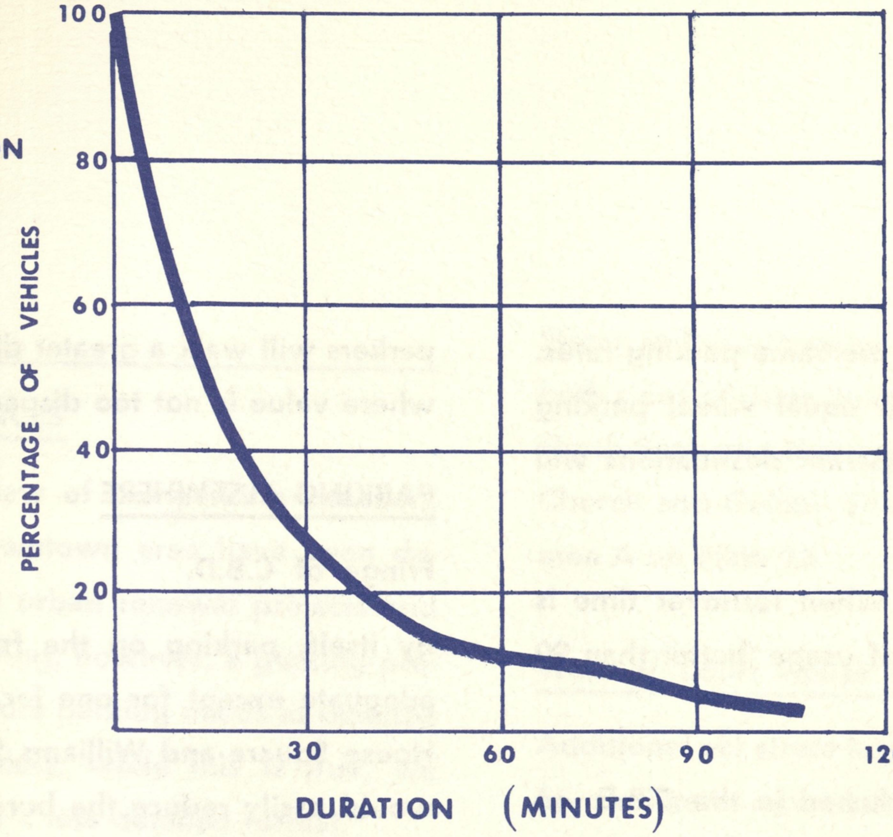
A convenient indication of parking needs is obtained from the usage of existing parking facilities. Graph 8 indicates the usage of the downtown on street parking and the 3 hour municipal lot expressed as a percentage of the capacity for the period between 10 A.M. and 6 P.M.

Parking on State Street is fully utilized during this eight hour period while Bank Street averages about 60 percent usage. The entire C.B.D. realizes an 80 percent utilization of all on street parking spaces. This is greater than the usage for



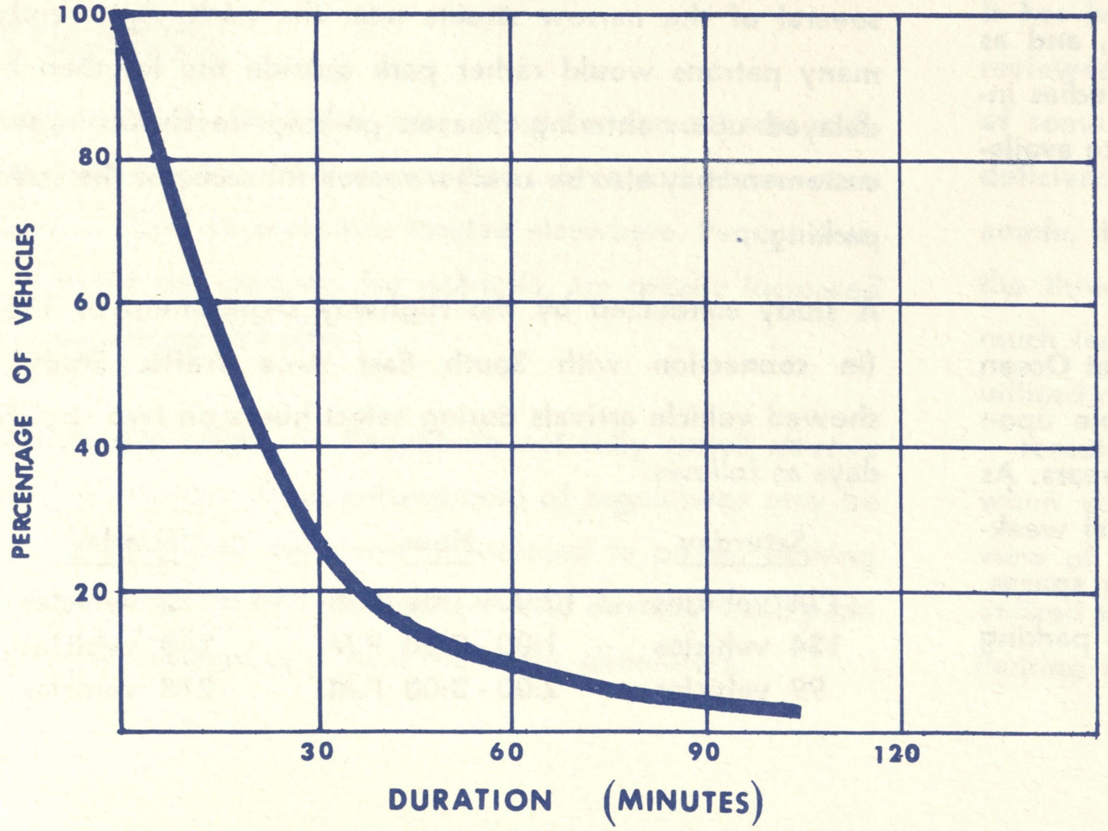
PARKING DURATION
3–HOUR LOT

GRAPH 5



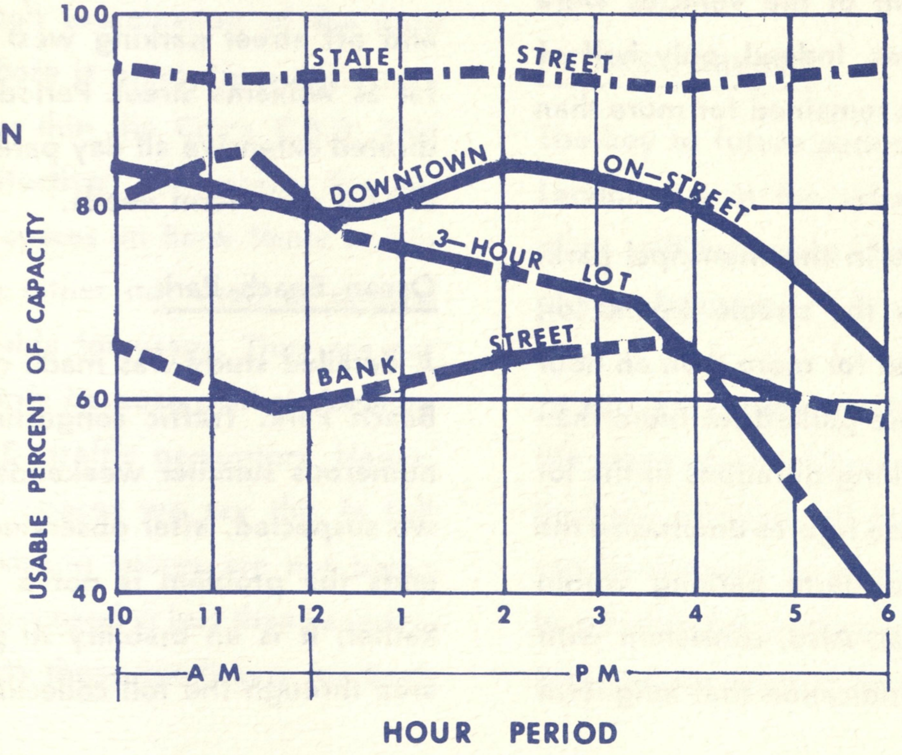
PARKING DURATION
BANK STREET (STATE–PEARL)

GRAPH 6



PARKING DURATION
STATE STREET

GRAPH 7



PARKING USAGE

GRAPH 8

the 3 hour municipal lot which has the same parking rates. Thus, it is inferred that even with equal value, parking facilities within close proximity of parker destinations will be more attractive.

Actually, State Street is saturated. When turnover time is considered, the continual high rate of usage (better than 90 percent) cannot be exceeded.

Parking duration studies were conducted in the C.B.D. on State Street, Bank Street and at the 3 hour municipal parking lot (See Graphs 5 to 8). The graphs for State Street and Bank Street indicate that only 25 percent of the vehicles were parked for more than thirty minutes. Indeed, only half of the vehicles parked on these streets remained for more than 15 minutes.

As expected, the parking durations in the municipal parking lot are slightly higher than for the streets. In the lot, 20 percent of the vehicles are parked for more than an hour and approximately half of them were parked for more than thirty minutes. On the average, parking durations in the lot are double those for the streets. These figures emphasize the strong demand that exists for short-term parking within easy access to the core of the C.B.D. Also, consistent with other communities, there is strong indication that long-term parkers will walk a greater distance than short-term parkers where value is not too disparate.

PARKING ELSEWHERE

Fringe of C.B.D.

By itself, parking on the fringe of the C.B.D. would be adequate except for one location; the area between Court House Square and Williams Street. Additional core parking would easily reduce the burden now applied to the fringe area off street lots and street parking.

Acute, however, is the long-term demand shown for street and off street parking west of Huntington Street, and as far as Williams Street. Periodic parking duration studies indicated extensive all day parking, leaving little space available for short-term needs.

Ocean Beach Park

A detailed study was made of parking conditions at Ocean Beach Park. Traffic congestion has been noticeable upon numerous summer weekends over a good many years. As we suspected, after observing conditions on several weekends the problem is not a deficiency of parking spaces. Rather, it is an inability to pass vehicles into the parking area through the toll collecting booths.

Another observation was the haphazard parking methods inside the parking lot. Many vehicles are parked with a disregard for others; ie., taking up too much space, parked at incorrect angles and generally disarranged.

The lot has a capacity of 2,000 car spaces. In 1966 attendance records on weekends show the lot was never fully occupied. July 4 attendance was 1,796 vehicles during the daytime. Observation on select weekends in 1967 also showed the lot not being used to capacity. A typical Saturday or Sunday attendance is usually 1,200 to 1,400 cars.

Coincidentally, many cars were observed parked along several of the narrow streets near the park. Apparently, many patrons would rather park outside the lot than be delayed upon entering. Season parking decals for repeat customers may also be another reason for some of the street parking.

A study conducted by the Highway Department in 1962 (in connection with South East Area Traffic Study[19]) showed vehicle arrivals during select hours on two specific days as follows:

Saturday	Hour	Sunday
124 vehicles	12:00 - 1:00 P.M.	112 vehicles
134 vehicles	1:00 - 2:00 P.M.	248 vehicles
99 vehicles	2:00 - 3:00 P.M.	218 vehicles

The large number of vehicles entering on Sunday cannot get into the parking area without causing a delay. The delay at the toll booths backs up traffic for a considerable distance north on Ocean Avenue and congests the entire lower area of the City.

It is our conclusion that the major cause of congestion and delay are the inefficient operation at the entrance to the parking area and the poor parking procedures permitted inside the lot. Both can easily be corrected through more diligent and efficient operations.

Pequot Avenue

Being a resort and shore area, New London attracts additional visitors in the summer time, over and above comparative sized communities located elsewhere. Pequot Avenue traffic and parking, for example, are greatly increased during summer months.

Parking restrictions on Pequot do not fully curtail abusive parking practice. Rigid enforcement of regulations may be the solution until the street is widened to permit parking on both sides. Another alternative is to develop small parking areas adjacent to or near the traffic generators.

PARKING NEEDS

EXISTING PARKING DEFICIENCES

Based upon analysis and review of the parking situation, current deficiencies in the downtown area have been determined. Because of the vast urban renewal projects and changes which are now occurring, however, a parking program has been based upon future parking needs as detailed later in this report. Nevertheless, while this is true, we present the current situation in a less detailed format.

C.B.D. Area

It has been determined through examination of the data reviewed and collected that there is presently a deficiency of some 350 parking spaces within the City's C.B.D. This deficiency represents 350 "effective" car spaces. For example, there are a number of spaces on Bank Street and in the three hour lot which are either not used or utilized much less than the time available for usage. They are not utilized more effectively primarily because of their location — remote from the basic C.B.D. traffic generators. Hence, when we say 350 "effective" spaces we say this in full view of the fact that some existing spaces are not being utilized at all and others are being used at less than capacity. Parking Usage, Graph 8 depicts these conditions for Bank Street and the three hour lot. Presently, the needs exist on both sides of State Street. Parking is deficient from between North Bank and Huntington — east, west and from between Church and Golden Street — north, south. This is shown as area A on Plate 23.

West of Court House Square

Additional off street lots with about 100 spaces would satisfy conditions now deficient in area B on Plate 23. These would remove all day parkers from the streets and permit space to be utilized by short-term parkers.

FUTURE PARKING

The key to future parking needs within the C.B.D. of New London lies in the urban renewal plans. Various renewal plans will formulate changes in land use and the intensity of development.

At this time, only the Winthrop Urban Renewal Plan is at the stage of development where specific determinations of land use, intensity of development, and compatible parking can be assessed. As a result, two locations have been chosen to provide for parking garages within the renewal project area and the core of the C.B.D., just north of State Street.

Plate 23 shows the proposed garage locations. These are strategically located to serve the proposed commercial developments from within and thereby form an integral part of the encompassing complex.

Encircling each area designated for parking usage is an area of influence which delineates the area to be served by the parking facility. Downtown parking must be aligned with short duration shopper and business desires and the area of influence for these parking facilities consists of all generators within a 350 foot walking distance. The size and composition of the area of influence determines the total parking needs at each facility.[20]

Main Street — Water Street Area

Completion of the Winthrop Urban Renewal Project will create a superblock between Main Street and Water Street with inclusion of a parcel for parking facilities (See Plate 23). The renewal plans call for replacing most of the existing development with new land uses which will account for over 600,000 square feet of new floor space. In conjunction with the land uses to remain, this block will encompass a total of nearly 700,000 square feet of floor area with a predominance of retail and office use. In addititon, the area of influence of the parking within this block will partially overlap the two blocks to the west of Main Street and also the area to the south of State Street. A proposed transportation center on Water Street will also attribute to the use of these parking facilities.

To serve adequately the parking needs within its area of influence, a parking facility in the Main Street - Water Street block should have a minimum capacity of about 1,000 cars. This will require a parking structure with a minimum of four parking levels. The land parcel is ideally suited to a multi-level parking structure, since it will provide access to both Main and Water Streets, and the sloping nature of the parcel will afford access to two different parking levels. The easy access will encourage usage of this facility by the short-term shopper and business parkers. Plate 24 shows an illustration of a typical garage development.

Church Street — Union Street Area

Provision should be made for parking facilities to serve the area of the C.B.D., west of Union Street. Coupled with the Main Street - Water Street parking facility, this will provide ample coverage for the entire C.B.D., north of State Street

The land parcel west of Union Street and between Church and Federal Streets has been designated in the Winthrop Urban Renewal Project for parking usage (See Plate 23). This parcel is ideally suited for parking, since it affords easy access from both Church Street and the proposed Union Street - Federal Street connector.

While parking requirements for this area cannot be finalized until the renewal plans for the area south of Church Street are completed, it s estimated that a minimum of 600 parking spaces are required.

On Street Parking in C.B.D.

To develop a compatible parking program for New London, it is necessary to evaluate both off street and on street parking needs. While all attempts should be made to satisfy the City's parking requirements with off street facilities, it will still be necessary to provide some on street parking. This should be restricted to those streets serving as access streets. Major arteries such as Main Street, Water Street and Church Street should not be used for parking purposes.

While both access to the C.B.D. and parking within the C.B.D. are important, convenient access is of greater importance and should not be sacrificed for parking usage.

Where high parking demand necessitates on street parking, it should be aligned with the needs of the short-term park-

er. This will insure the maximum return for each space in the form of sales or convenience.

No on street parking should be permitted in those areas within close proximity of the parking garages. This will encourage use of the garages and eliminate any congestion due to on street parking. Finally, when the garages are constructed, a detail rate structure analysis should be made of all street parking to assure that it is compatible and not in conflict with off street rate structures.

Estimates and Priorities

Cost of Improvements

A review of Plate 12 will show the extensive program of improvements outlined as a result of this study and analysis. Generally, the C.B.D. and surrounding core area are designated for the most dynamic changes. A goodly portion of the costs of such development, however, will be paid for through financial assistance provided by Federal and State programs of urban renewal.

In other areas — outside of renewal projects — the City or the State Highway Department will share the costs of some improvements or the City will be solely responsible where the Highway Department is not involved.

The following enumeration of various improvement costs have been prepared on the basis of present economic conditions. As improvements are delayed, or established in future priorities, increased costs can be expected. Construction costs have continued, on a steady increase for the past 25 years.

Because much of the work is within renewal project areas, those areas are listed first in the estimates. No property acquisition costs are reflected in the estimates.

A. Winthrop Renewal Area[21]

Street	Estimated Costs
Main Street (State to Richards)	$270,000
Water Street (State to Richards)	180,000
Church Street	125,000
Federal Street	40,000
Union Street	40,000
Court House Square	20,000
Meridian Street	25,000
Masonic Street	10,000
Huntington Street	130,000
Winthrop Street	30,000
Crystal Avenue	205,000
Subtotal —	$1,075,000

B. Shaw's Cove G.N.R.P.

Street	Estimated Costs
Bank Street (State to Shaw)	$350,000
Tilley Street	60,000
Howard Street (Bank to Hamilton)	160,000
Shaw Street	90,000
New Street	300,000
Blackhall Street Extension	40,000
Hempstead Street Extension	60,000
Subtotal —	$1,060,000

C. Roadway and Bridge Across Hurricane Dike; Shaw's Cove*

Bridge at Dike Gate	$ 650,000
Roadway	300,000
Subtotal —	$ 950,000

*From a report by Purcell Associates on the Feasibility of a Dike Roadway presented to the Planning Board in 1966.

D. Other Street Improvements

Blackhall Street (from Truman north)	$ 40,000
William Street Extension	110,000
Howard Street (Hamilton to Maple)	100,000
Willetts Avenue Relocation	85,000
Maple Street (including bridge)	150,000
Pequot Avenue (Willetts to Walbach)	60,000
Ocean Avenue (R.R. Bridge)	75,000
Montauk Avenue (R.R. Bridge)	65,000
Bank Street (Shaw to Ocean)	50,000
Jay Street Realignment	15,000
Robinson Street Extension	70,000
Trumbull Street	15,000
Pequot (Wallbach to Dike Roadway)	80,000

INTERSECTIONS

Jefferson Avenue-Chester Street	40,000
Colman-Bank-Lee	35,000
Vauxhall Street-Third Avenue	5,000

WIDENINGS

Hempstead Street	5,000
Williams Street	35,000
Jefferson Avenue	60,000
Colman Street	60,000
Subtotal —	$1,155,000

E. Traffic Signals

Winthrop Renewal Area	60,000
Shaw's Cove G.N.R.P.	100,000
	150,000
Subtotal —	$ 310,000

SUMMARY OF COSTS

A. Winthrop Renewal Area

Streets	$1,075,000
Traffic Signals	60,000
Subtotal —	$1,135,000

B. Shaw's Cove G.N.R.P.

Streets	$1,080,000
Traffic Signals	100,000
Subtotal —	$1,180,000

C. Dike Roadway and Bridge

C. Dike Roadway and Bridge	$ 950,000

D. Other Street Improvements

Streets	$1,155,000
Traffic Signals	150,000
Subtotal —	$1,305,000
TOTAL COST —	$4,570,000

NEW LONDON'S COST

Fortunately for New London, a great deal of the money needed for improvements must be spent in two major urban renewal areas; Winthrop and Shaw's Cove projects. For example, almost all of the sums involved in A and B above will be non-cash local grants-in-aid in their respective renewal areas. Thus, New London will receive the benefit of constructed streets and appurtenances at no additional outlay since they would ordinarily have to contribute the sums of money as their share of urban renewal cost, regardless. The Dike Roadway is a somewhat similar situation where the City would contribute a share of the total $7.5 million cost of a hurricane barrier. Thus, a portion of its share now will purchase a roadway and bridge extremely useful, as is the dike.

Therefore, there appears to be about $1.3 million which the City must spend if they are to make various improvements elsewhere in the community. We, of course, feel these improvements are as vital as those involved in the renewal areas, including the Dike Roadway.

Priority Schedule of Improvements

New London is extremely fortunate in being in a position to receive Federal and State financial assistance for a substantial segment of the funds required to rehabilitate its outmoded street system. The good position is the result of several large urban renewal projects which the City has begun over the past few years.

The City actually would be hard pressed otherwise to develop a long-range plan of improvements because the financial burden is high. About $4.6 million are required to provide for improvements suggested and recommended herein. To accomplish successfully even a ten year program of capital improvements without financial assistance would easily cost the City a minimum of three-quarters of a million per year when interest and amortization charges are included.

A priority schedule, therefore, has been selected which will permit the City to take full advantage of the Federal and State financial assistance at appropriate times during the development of other work programs such as that under way through urban renewal.

PROGRAM NUMBER	DESCRIPTION	TIME PERIOD
	Priority Schedule	
I	All streets, roadways, and incidental work which lies within the Winthrop Urban Renewal Area.	1968-1971
II	All streets, roadways, and * incidental improvements in Shaw's Cove G.N.R.P. Area including the Hurricane Dike Roadway.	1971-1974
III	All streets, roadways, and other incidental improvements including intersection changes and street widenings in Item D in the foregoing estimates.	
	A. Street Improvements	1971-1979
	B. Intersections	1968-1969
	C. Widenings	1968-1971
IV	Traffic Signals in other locations throughout the City.	1968-1973

*Hurricane Dike to be started no later than 1971.

ANNOTATIONS

1 The General Plan has been developed concurrent with this effort.

2 Land Use Patterns and Policies, 1962 by Southeast Connecticut Regional Planning Association. Employment Zones developed by SCRPA based upon analyses of land use maps, employment data from Connecticut Labor Department and community data from the 1960 Census of Population.

3 Much of this data has been developed from #701, Interim Report — Population Study, 1966 by James P. Purcell Associates.

4 Highway Research Board, Highway Capacity Manual, 1965.

5 South East Area Traffic Study by the Connecticut Highway Department which utilized a trip distribution model (a gravity type model).

6 Future Land Use Plan — City Planning Board, New London, Conn.; by James P. Purcell Associates.

7 By James P. Purcell Associates in 1965.

8 1960 figures from Economic Base Study, by James P. Purcell Associates, January, 1966.

9 SCRPA, "Population and Housing" — 1963.
The 1963 center of population for the Southeast Region lies east of the Thames River, opposite New London's north boundary.

10 By James P. Purcell Associates from data furnished by SCRPA, Conn. State Department of Health, C.D.C. and Southeast Area Traffic Study.

11 "Population and Housing" Southeastern Connecticut Regional Planning Agency — 1963.

12 By James P. Purcell Associates for the City Planning Board, New London, Connecticut, 1966.

13 SCRPA; James P. Purcell Associates. "Economic Base Study, New London, Connecticut" — 1966; Southeast Area Traffic Study, Connecticut State Highway Department.

14 Urban Transportation Demand and Coordination, Bulletin 326, Highway Research Board, 1962.

15 The proportion of travel increase is not directly related to the increase in population. Many factors such as changes in automobile ownership, density of population, technical innovation, etc., will have bearing upon future trip increases.

16 Traffic Engineering Handbook; Institute of Traffic Engineers, Pages 664; 1965.

17 Report entitled Justification and Feasibility Report Roadway on top of the Proposed Hurricane Dike at Shaw's Cove, New London, Connecticut by J. P. Purcell Assoc.

18 Purcell Associates is assisting the New London Redevelopment Agency in developing a G.N.R.P. which covers the "Fort" and extensive adjacent area.

19 Connecticut State Highway Department. Part of overall transportation study in SEATS area.

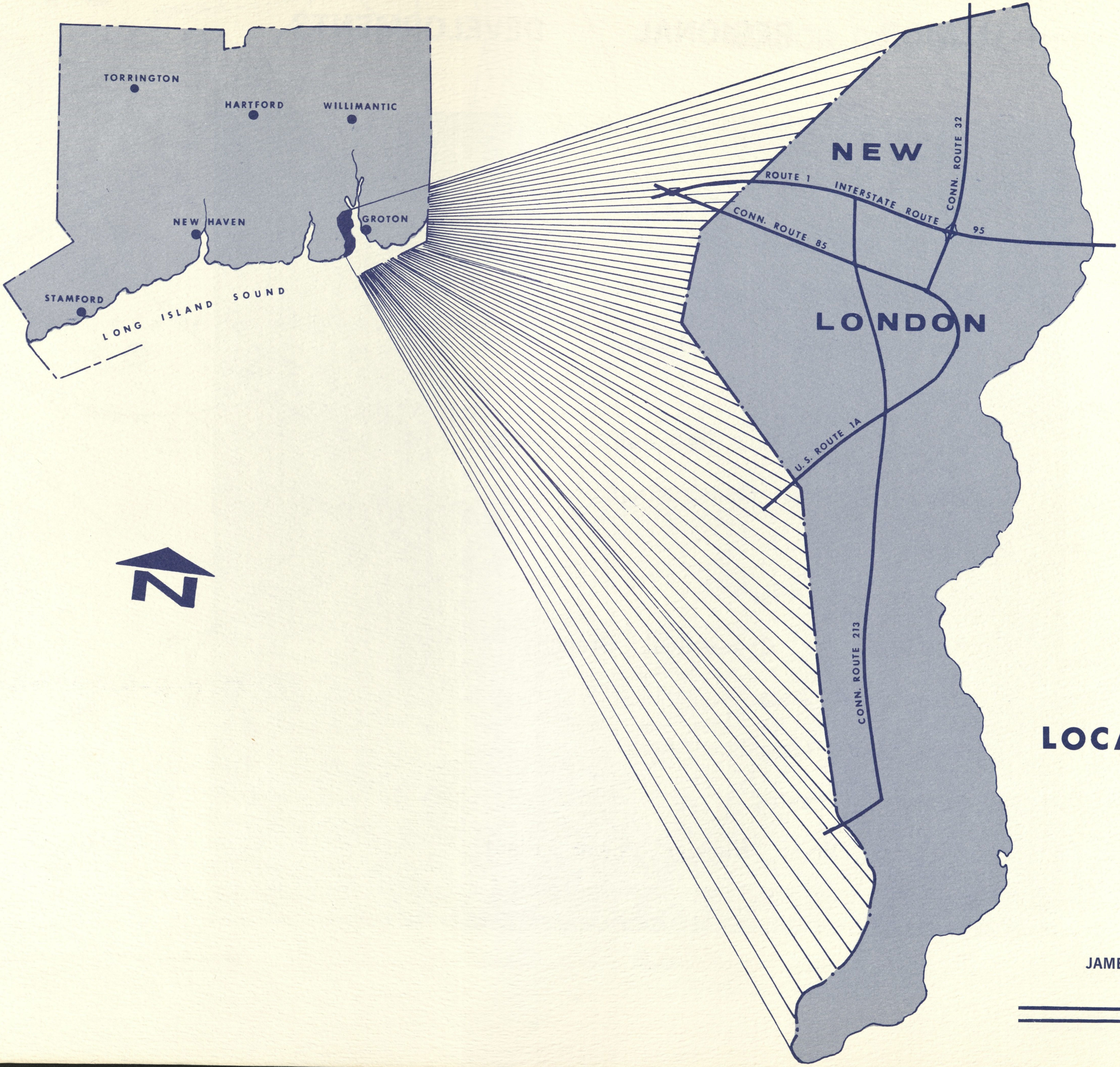
20 Processed by space utilization and traffic generation techniques.

21 Cost estimates reflect work in an advanced preliminary design stage now being carried on by the New London Redevelopment Agency and Purcell Associates. Estimates include contingencies for miscellaneous items as well as administrative and engineering costs.

PART 3
NEW LONDON TRANSPORTATION STUDY

Illustrations

NEW LONDON TRANSPORTATION STUDY


TORRINGTON
HARTFORD
WILLIMANTIC
NEW HAVEN
GROTON
STAMFORD
LONG ISLAND SOUND
N
NEW
LONDON
ROUTE 1
INTERSTATE ROUTE 95
CONN. ROUTE 32
CONN. ROUTE 85
U.S. ROUTE 1A
CONN. ROUTE 213

LOCATION MAP

PLATE 1

JAMES P. PURCELL ASSOCIATES

MAJOR REGIONAL DEVELOPMENTS

① Industrial Area

② Connecticut Route 85 Relocation

③ Major Highway Construction

④ Major Highway Interchange

⑤ Bridge

⑥ Electric Boat Co. Research Laboratory

⑦ Major Highway Construction

⑧ Retail Center

⑨ Recreational Area

⑩ University of Connecticut Branch

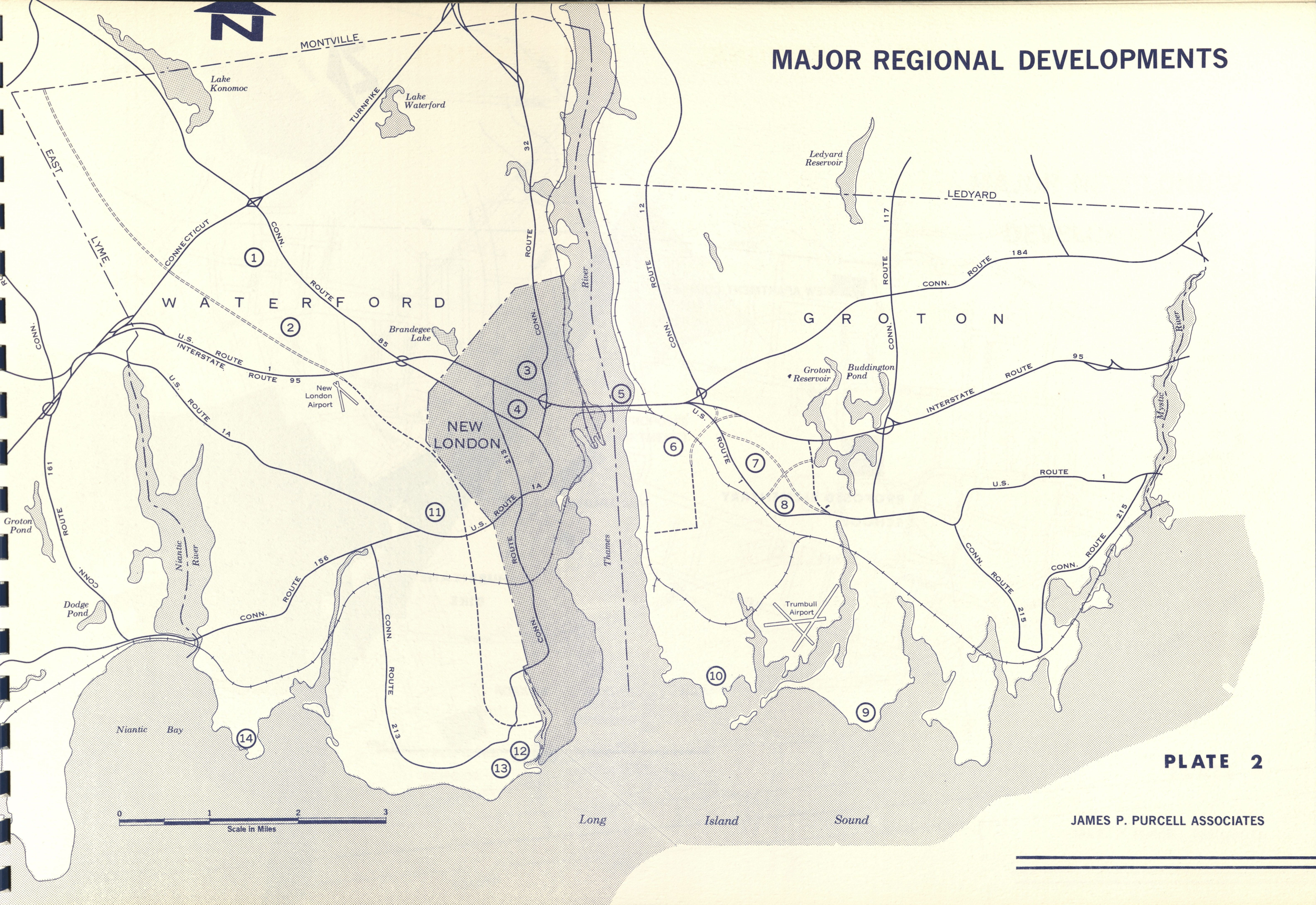
⑪ Commercial Area

⑫ Park and Recreation Area

⑬ Summer Theatre

⑭ Millstone Point Nuclear Power Plant

MAJOR REGIONAL DEVELOPMENTS


N
MONTVILLE
Lake Konomoc
Lake Waterford
TURNPIKE
EAST LYME
CONNECTICUT
CONN. ROUTE 85
32
ROUTE
CONN.
River
Thames
12
ROUTE
CONN.
Ledyard Reservoir
LEDYARD
117
ROUTE
CONN.
CONN. ROUTE 184
WATERFORD
GROTON
Brandegee Lake
U.S. ROUTE 1
INTERSTATE ROUTE 95
U.S. ROUTE 1A
New London Airport
NEW LONDON
213
ROUTE 1A
U.S. ROUTE
Groton Reservoir
Buddington Pond
INTERSTATE ROUTE 95
U.S. ROUTE 1
Mystic River
CONN. ROUTE 161
Groton Pond
Dodge Pond
Niantic River
CONN. ROUTE 156
CONN. ROUTE 213
ROUTE
CONN.
Trumbull Airport
CONN. ROUTE 215
Niantic Bay
Long Island Sound
1
2
3
4
5
6
7
8
9
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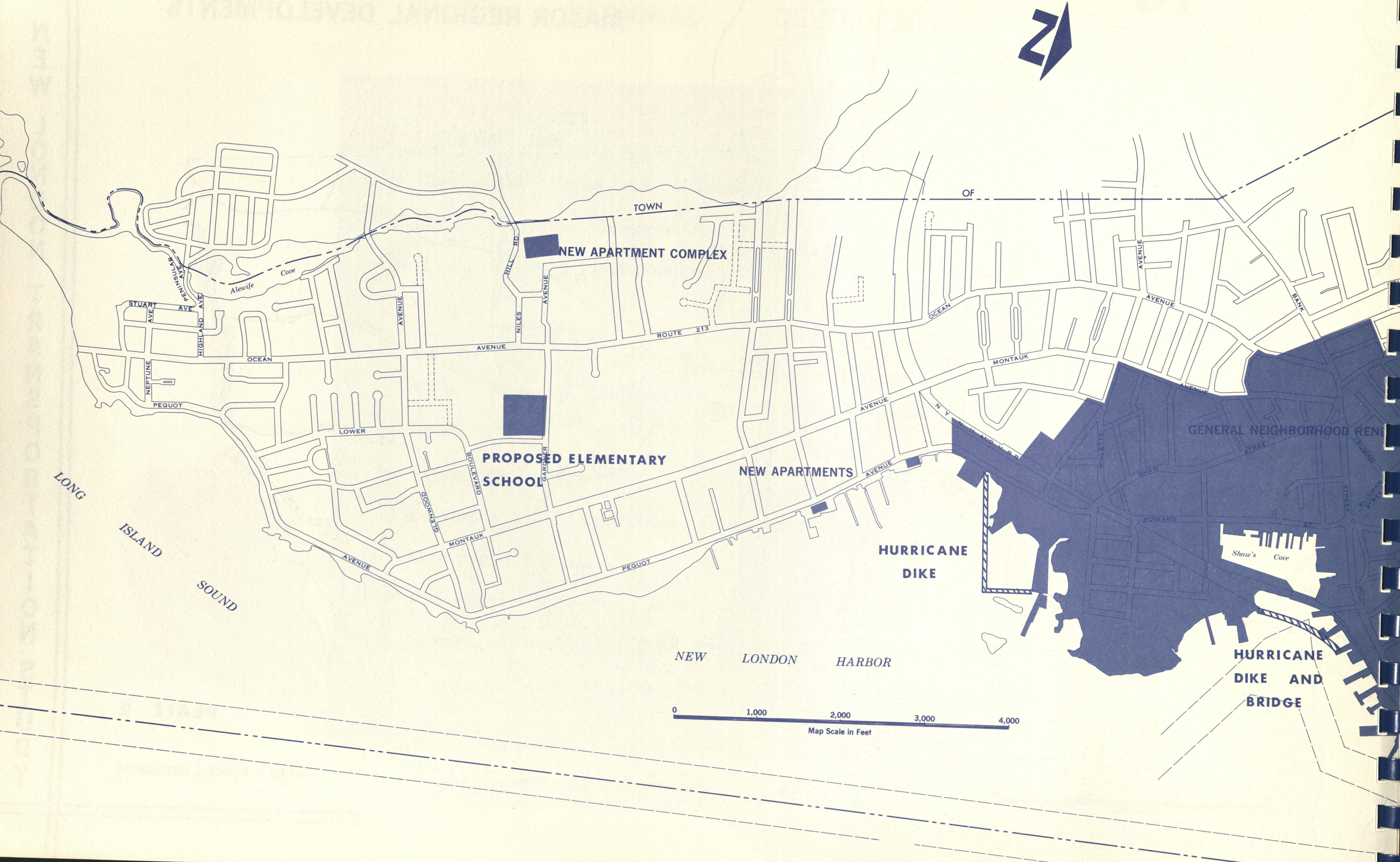
3
Scale in Miles

PLATE 2

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY


N
TOWN
OF
NEW APARTMENT COMPLEX
PROPOSED ELEMENTARY SCHOOL
NEW APARTMENTS
HURRICANE DIKE
HURRICANE DIKE AND BRIDGE
GENERAL NEIGHBORHOOD RENE
Alewife Cove
Shaw's Cove
LONG ISLAND SOUND
NEW LONDON HARBOR
STUART AVE.
AVE.
PENINSULAR AVE.
AVE.
HIGHLAND AVE.
NEPTUNE
OCEAN AVENUE
ROUTE 213
OCEAN AVENUE
PEQUOT
PEQUOT AVENUE
LOWER BOULEVARD
GLENWOOD
MONTAUK
AVENUE
NILES HILL RD.
AVENUE
GARDNER AVENUE
MONTAUK AVENUE
N.Y., N.H. AND H. R.R.
BANK
AVENUE
AVENUE
WILLETTS
SHAW STREET
HOWARD ST.
TRUMAN
BLINMAN STREET
STREET
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1,000
2,000
3,000
4,000
Map Scale in Feet

MAJOR NEW LONDON DEVELOPMENTS

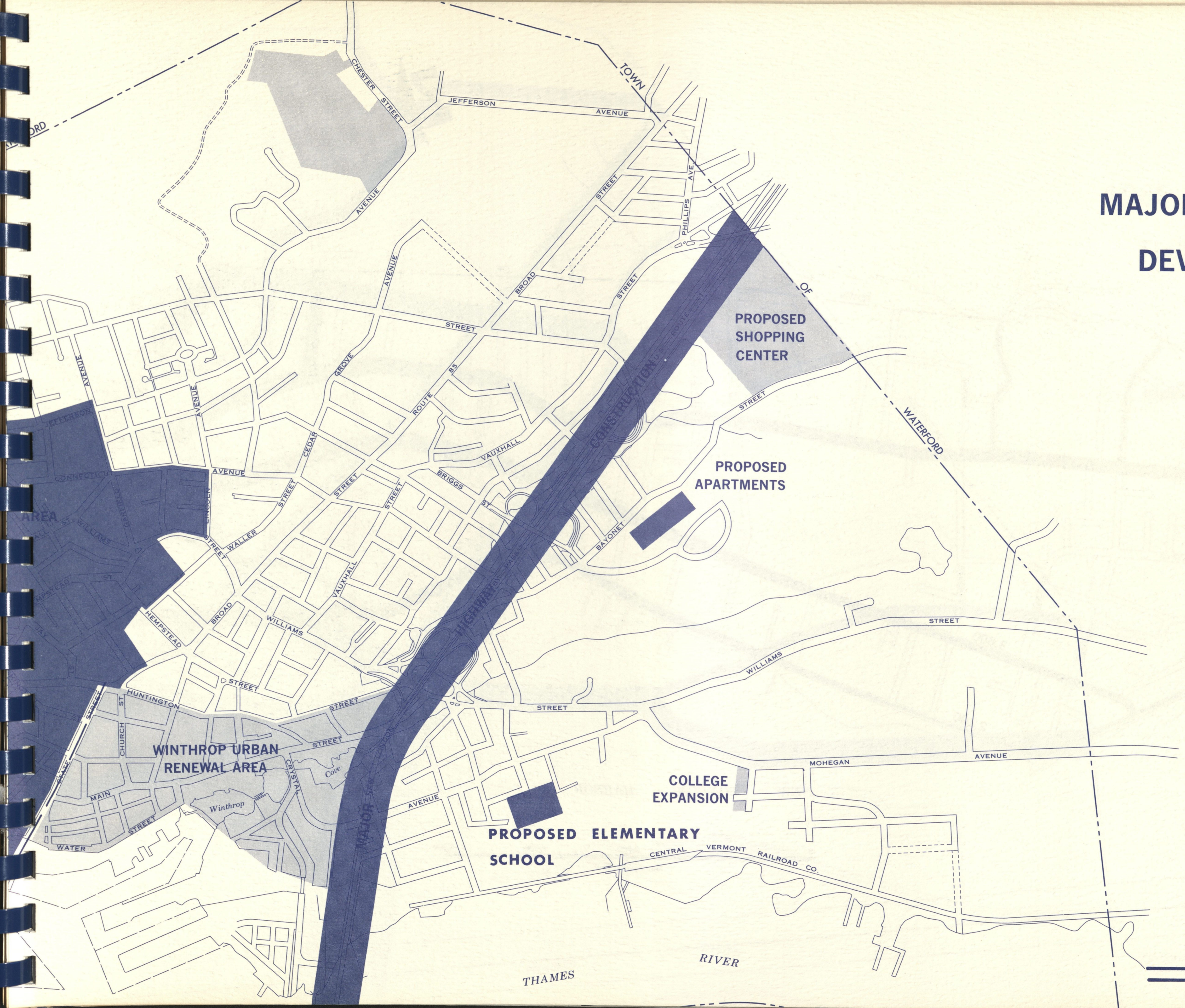
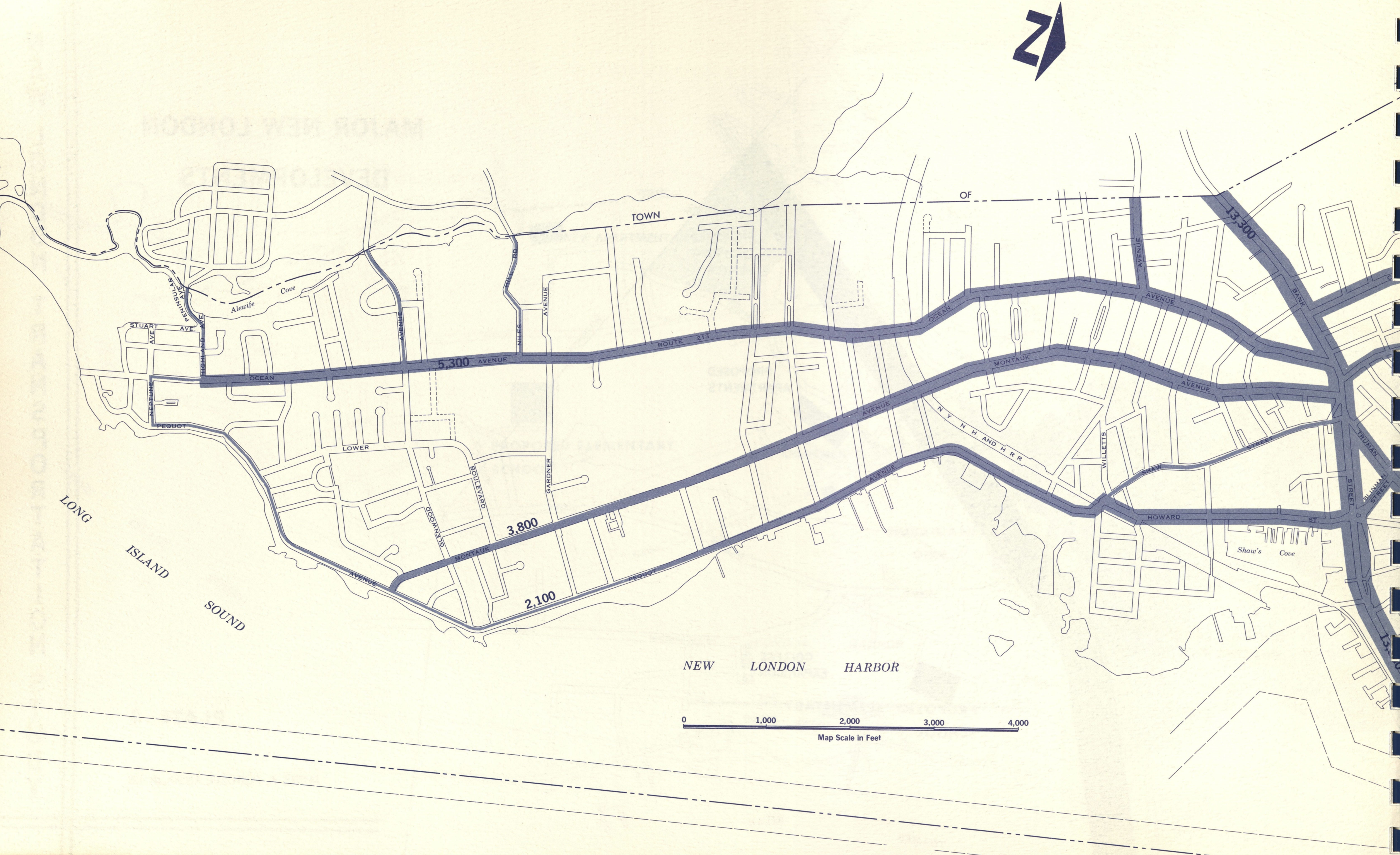

PROPOSED SHOPPING CENTER
PROPOSED APARTMENTS
COLLEGE EXPANSION
PROPOSED ELEMENTARY SCHOOL
WINTHROP URBAN RENEWAL AREA
AREA
MAJOR HIGHWAY CONSTRUCTION
TOWN OF WATERFORD
JEFFERSON AVENUE
CHESTER STREET
AVENUE
STREET
BROAD STREET
PHILLIPS AVE
GROVE AVENUE
ROUTE 85
CEDAR STREET
VAUXHALL STREET
BRIGGS ST
BAYONET STREET
WILLIAMS STREET
HEMPSTEAD STREET
LINCOLN STREET
WALLER STREET
CONNECTICUT AVENUE
HUNTINGTON STREET
CHURCH ST
STATE STREET
MAIN STREET
WATER
CRYSTAL AVENUE
Cove
Winthrop
MOHEGAN AVENUE
CENTRAL VERMONT RAILROAD CO.
THAMES RIVER

PLATE 3

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY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13,300
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NEPTUNE
PEQUOT
OCEAN
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AVENUE
ROUTE 213
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MONTAUK
AVENUE
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BOULEVARD
GARDNER
GLENWOOD
MONTAUK 3,800
AVENUE
PEQUOT
2,100
AVENUE
WILLETTS
SHAW
STREET
HOWARD
ST
STREET
TRUMAN
BLINMAN STREET
Shaw's Cove
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LONG ISLAND SOUND
NEW LONDON HARBOR
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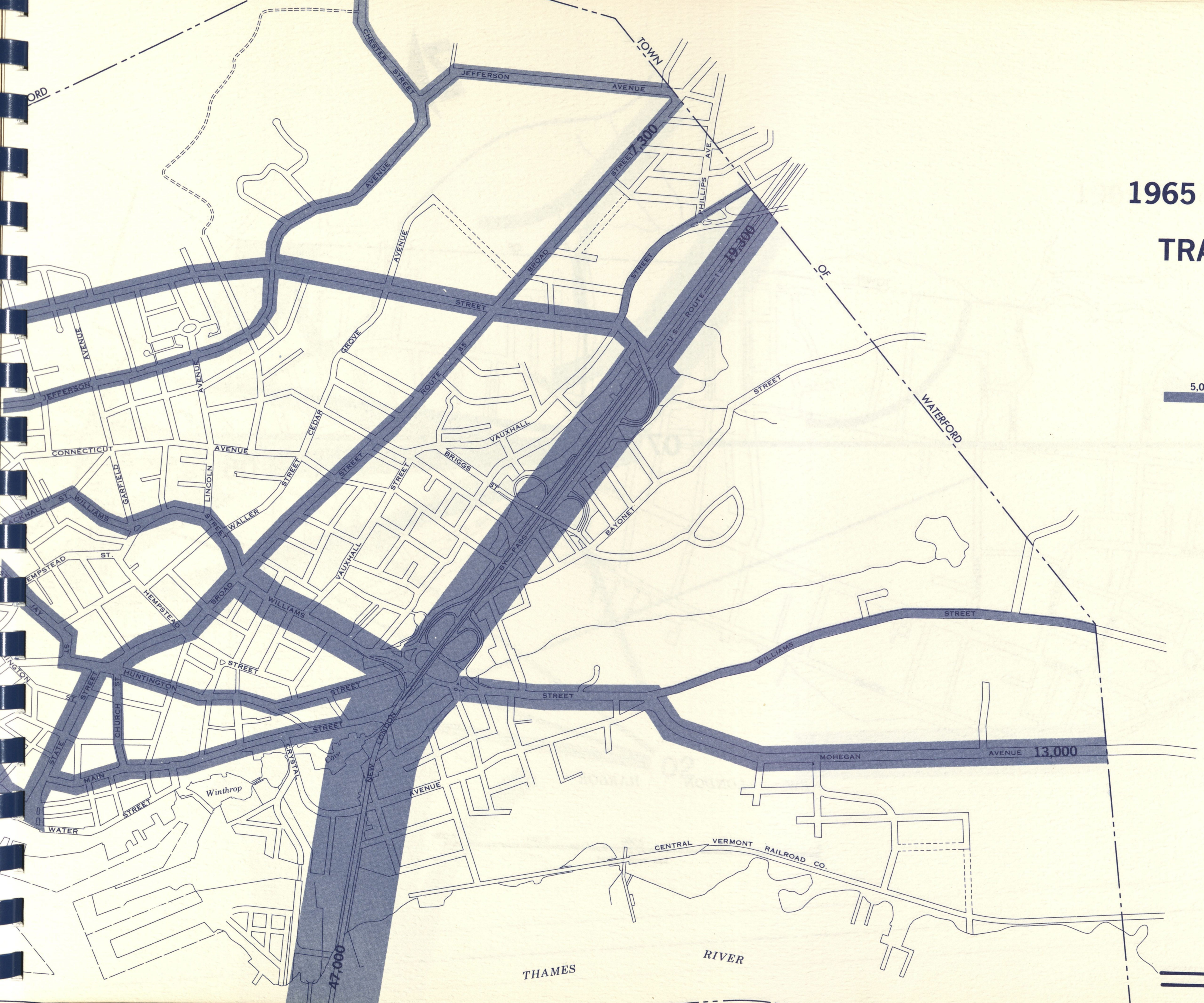
Map Scale in Feet

1965 AVERAGE DAILY TRAFFIC FLOWS


7,300
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JEFFERSON AVENUE
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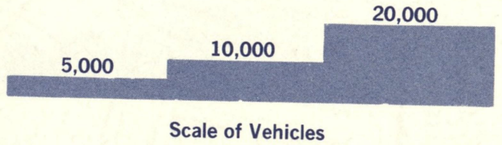
BROAD STREET
ROUTE 85
U.S. ROUTE 1
BY-PASS
PHILLIPS AVE
GROVE
CEDAR STREET
VAUXHALL
VAUXHALL STREET
BRIGGS ST
BAYONET
JEFFERSON
CONNECTICUT AVENUE
GARFIELD
LINCOLN STREET
WALLER
ST. WILLIAMS
HEMPSTEAD ST.
HEMPSTEAD
JAY
WILLIAMS
HUNTINGTON
CHURCH ST
STATE
MAIN STREET
WATER
Winthrop
Cove
CRYSTAL
NEW LONDON
AVENUE
MOHEGAN AVENUE
WILLIAMS STREET
CENTRAL VERMONT RAILROAD CO.
THAMES RIVER
TOWN OF WATERFORD
ORD


5,000
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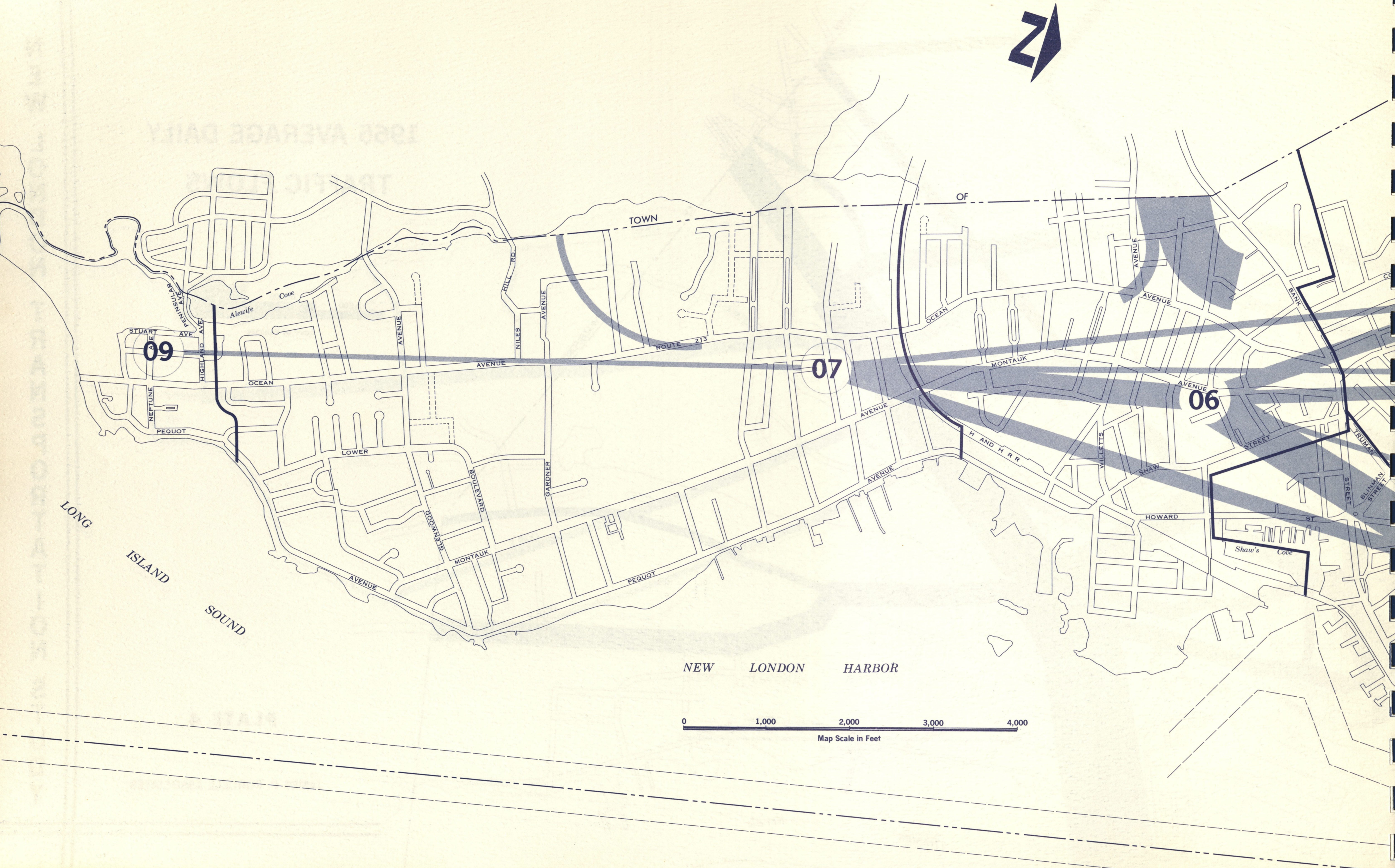
20,000

Scale of Vehicles

PLATE 4

JAMES P. PURCELL ASSOCIATES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STUART AVE.
PENINSULAR AVE.
HIGHLAND AVE.
NEPTUNE
Alewife Cove
OCEAN AVENUE
ROUTE 213
PEQUOT
LOWER
BOULEVARD
GLENWOOD
MONTAUK AVENUE
PEQUOT AVENUE
HILL RD
NILES
AVENUE
GARDNER
OCEAN AVENUE
MONTAUK AVENUE
AVENUE
WILLETTS
SHAW
H AND H R R
HOWARD ST.
STREET
BANK
TRUMAN
BLINMAN STREET
Shaw's Cove
LONG ISLAND SOUND
NEW LONDON HARBOR
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1,000
2,000
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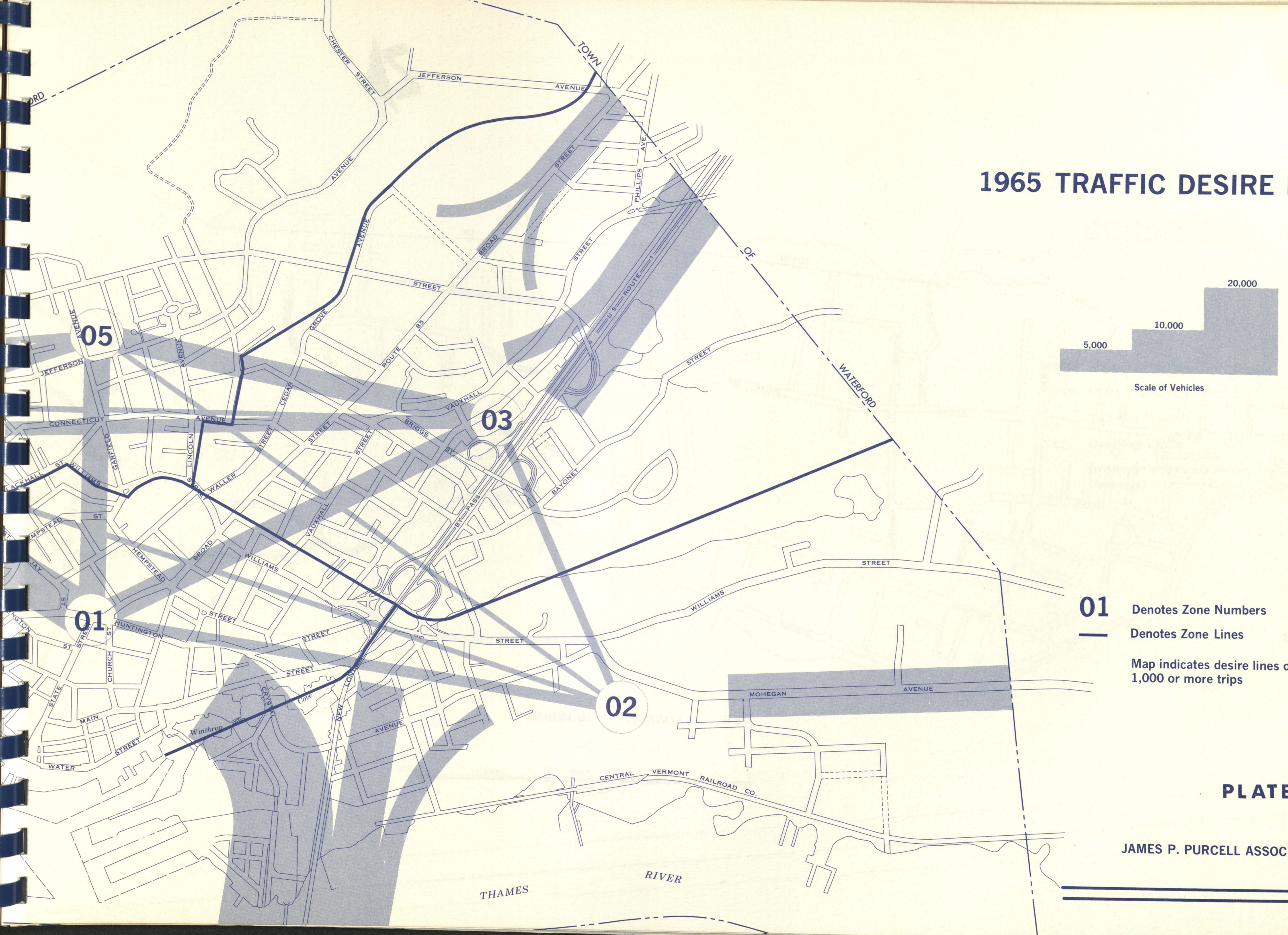
4,000
Map Scale in Feet

1965 TRAFFIC DESIRE LINES



20,000
10,000
5,000
Scale of Vehicles
01
02
03
05
TOWN OF WATERFORD
JEFFERSON AVENUE
CHESTER STREET
AVENUE
BROAD STREET
PHILLIPS AVE
STREET
U.S. ROUTE 1
ROUTE 85
GROVE
VAUXHALL
BRIGGS ST
CEDAR STREET
STREET
STREET
CONNECTICUT AVENUE
JEFFERSON
AVENUE
AVENUE
GARFIELD
LINCOLN STREET
WALLER
WILLIAMS ST
BLACKHALL
HEMPSTEAD ST
HEMPSTEAD
BROAD
WILLIAMS
VAUXHALL
BY-PASS
BAYONET
JAY ST
HUNTINGTON
CHURCH ST
STREET
STREET
STREET
STREET
WILLIAMS
STREET
STATE
MAIN
WATER
STREET
NEW LONDON
CRYSTAL
Cove
Winthrop
AVENUE
MOHEGAN AVENUE
CENTRAL VERMONT RAILROAD CO.
THAMES RIVER

01 Denotes Zone Numbers

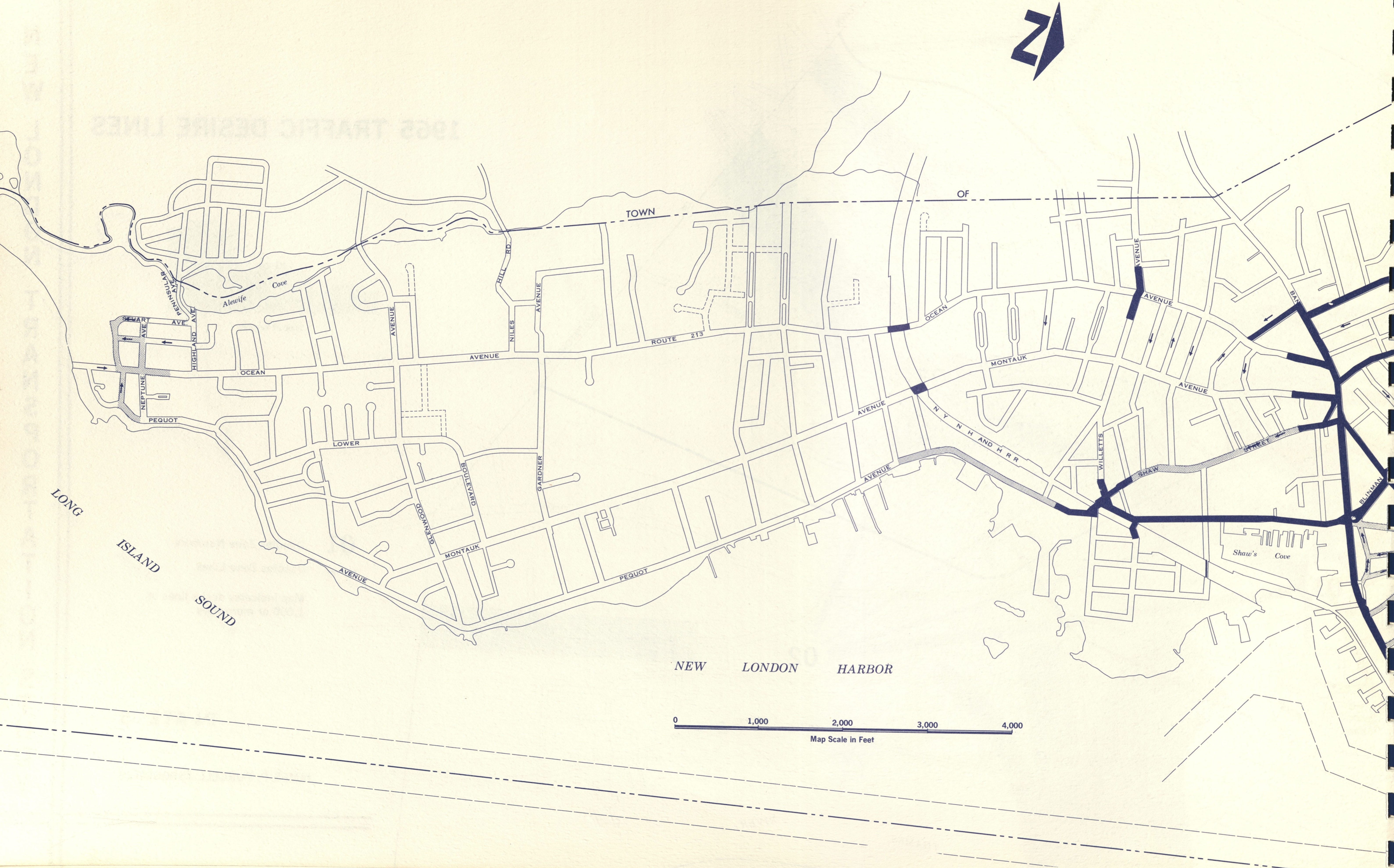
— Denotes Zone Lines

Map indicates desire lines of 1,000 or more trips

PLATE 5

JAMES P. PURCELL ASSOCIATES

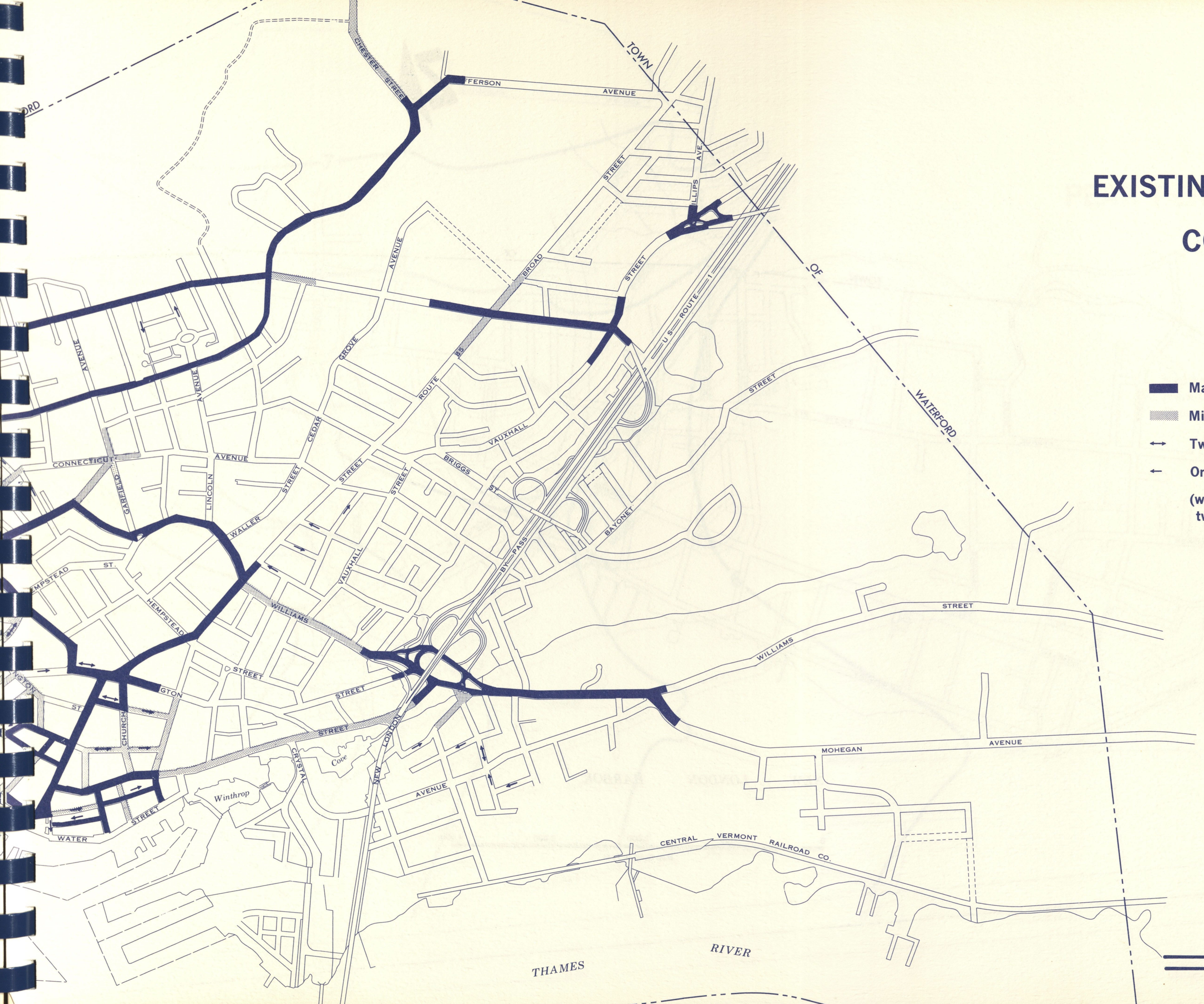
NEW LONDON TRANSPORTATION STUDY



N
TOWN
OF
Alewife
Cove
STUART
AVE.
PENINSULAR AVE.
HIGHLAND AVE.
NEPTUNE AVE.
OCEAN
AVENUE
PEQUOT
LOWER
BOULEVARD
GLENWOOD
MONTAUK
AVENUE
HILL RD
NILES
AVENUE
GARDNER
ROUTE 213
AVENUE
PEQUOT
OCEAN
MONTAUK
AVENUE
N Y N H AND H R R
AVENUE
AVENUE
AVENUE
WILLETTS
SHAW
STREET
BLINMAN
BA
Shaw's
Cove
LONG
ISLAND
SOUND
NEW
LONDON
HARBOR
0
1,000
2,000
3,000
4,000
Map Scale in Feet

NEW LONDON TRANSPORTATION STUDY

EXISTING TRAFFIC FLOW CONDITIONS



ORD
TOWN
OF
WATERFORD
CHESTER STREET
JEFFERSON AVENUE
STREET
AVE
ILLIPS
BROAD
STREET
AVENUE
GROVE
ROUTE 85
U.S. ROUTE 1
STREET
VAUXHALL
BRIGGS ST
CEDAR
STREET
STREET
STREET
BAYONET
BY-PASS
AVENUE
AVENUE
AVENUE
CONNECTICUT
AVENUE
GARFIELD
LINCOLN
WALLER
ST.
HEMPSTEAD
HEMPSTEAD
VAUXHALL
WILLIAMS
STREET
STREET
GTON
ST
CHURCH
STREET
STREET
NEW LONDON
CRYSTAL
Cove
Winthrop
STREET
WATER
AVENUE
WILLIAMS
STREET
MOHEGAN
AVENUE
CENTRAL VERMONT RAILROAD CO.
RIVER
THAMES

▬ Major Traffic Flow Restrictions

▨ Minor Traffic Flow Restrictions

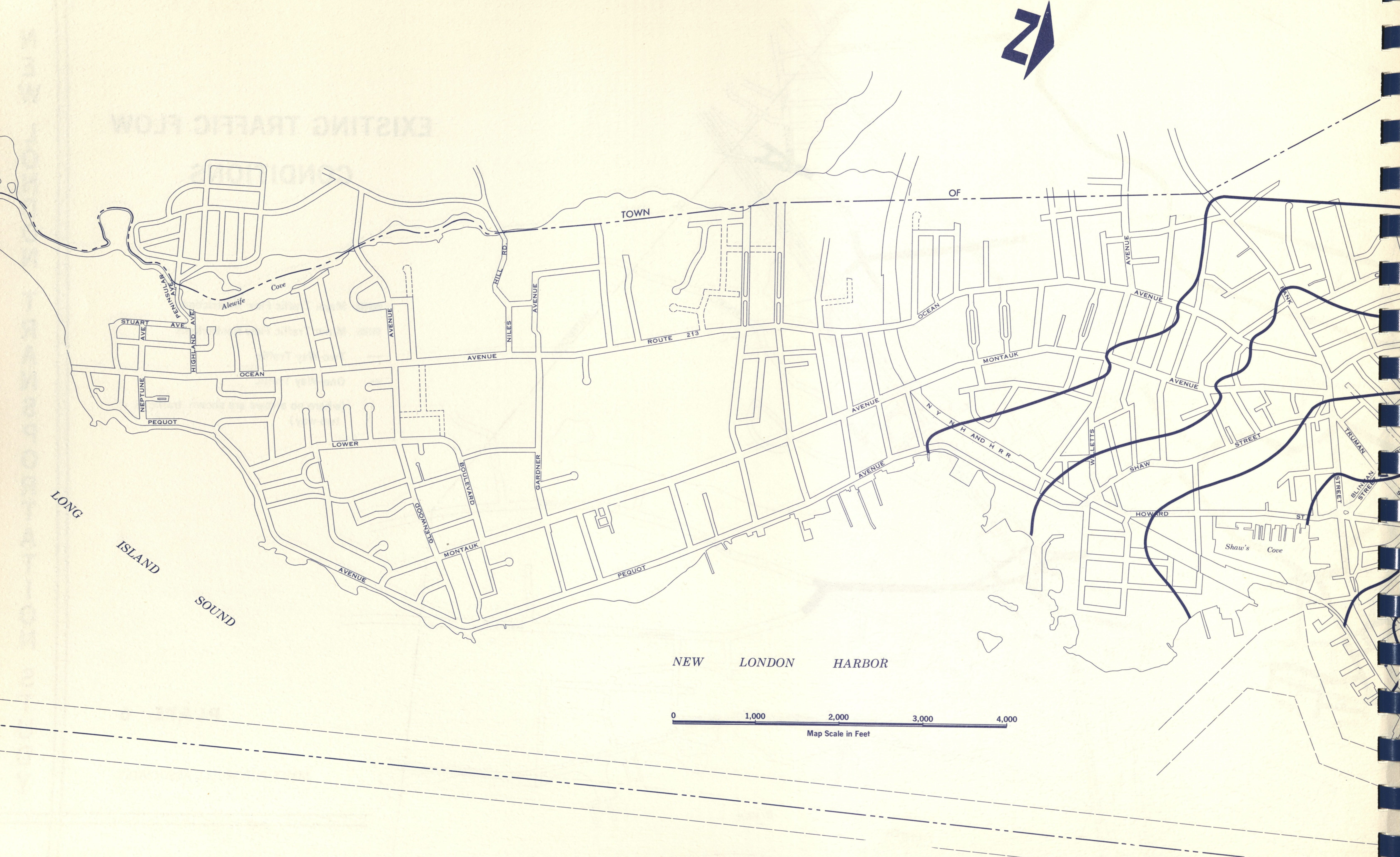
↔ Two-Way Traffic

← One-Way Traffic

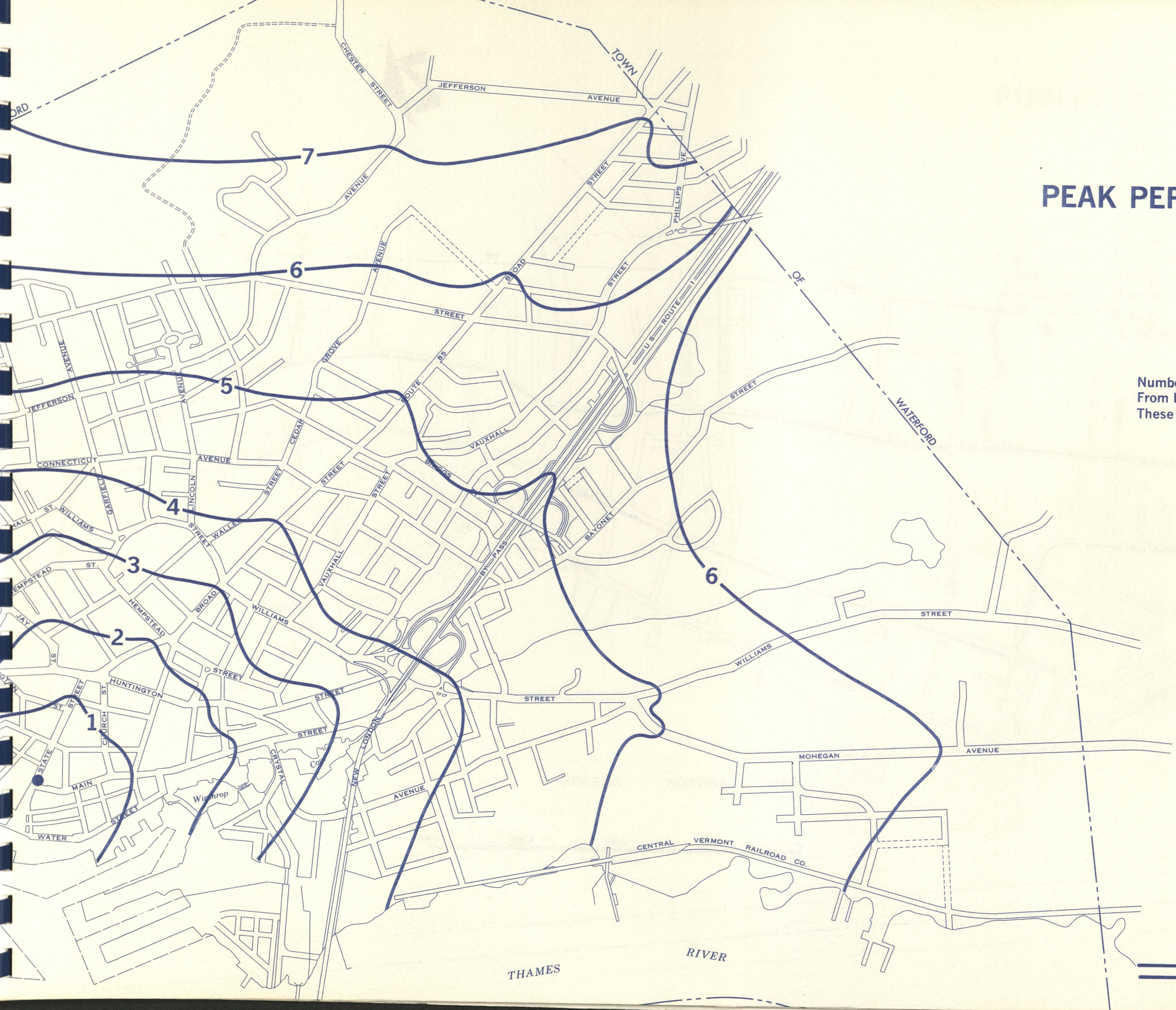
(where no arrows are shown traffic is two-way)

PLATE 6

JAMES P. PURCELL ASSOCIATES


N
TOWN
OF
Alewife
Cove
PENINSULAR AVE.
STUART AVE.
AVE.
HIGHLAND AVE.
NEPTUNE
OCEAN
AVENUE
PEQUOT
LOWER
BOULEVARD
GLENWOOD
MONTAUK
AVENUE
HILL RD
NILES
AVENUE
GARDNER
ROUTE 213
OCEAN
AVENUE
MONTAUK
AVENUE
AVENUE
PEQUOT
N Y N H AND H R R
AVENUE
AVENUE
AVENUE
WILLETTS
SHAW
STREET
HOWARD
ST
BANK
TRUMAN
STREET
BLINMAN STREET
Shaw's
Cove
LONG
ISLAND
SOUND
NEW
LONDON
HARBOR
0
1,000
2,000
3,000
4,000
Map Scale in Feet

PEAK PERIOD TRAVEL TIMES

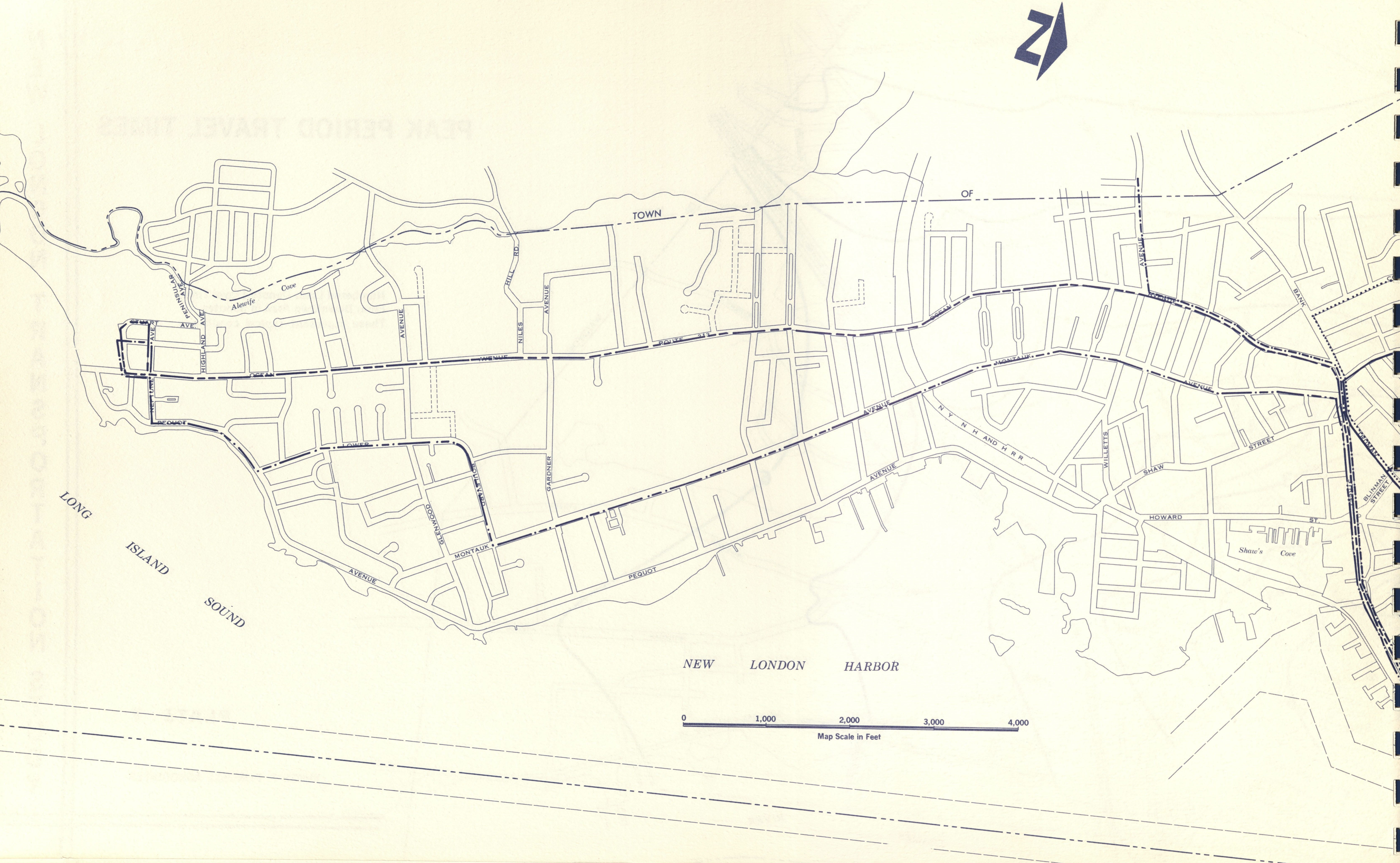

7
6
5
4
3
2
1
6
TOWN
OF
WATERFORD
JEFFERSON
AVENUE
CHESTER
STREET
AVENUE
PHILLIPS
AVE.
STREET
BROAD
STREET
STREET
U.S. ROUTE 1
GROVE
ROUTE 85
JEFFERSON
AVENUE
AVENUE
CONNECTICUT
AVENUE
CEDAR
STREET
STREET
STREET
VAUXHALL
BRIGGS
BAYONET
STREET
GARFIELD
LINCOLN
STREET
WALLER
WILLIAMS
ST.
HALL
HEMPSTEAD
ST.
HEMPSTEAD
BROAD
WILLIAMS
VAUXHALL
BY-PASS
JAY
ST.
STREET
HUNTINGTON
ST.
STREET
STREET
STREET
STREET
STATE
MAIN
CHURCH
STREET
WATER
Winthrop
CRYSTAL
NEW LONDON
AVENUE
STREET
WILLIAMS
STREET
MOHEGAN
AVENUE
CENTRAL VERMONT RAILROAD CO.
THAMES
RIVER

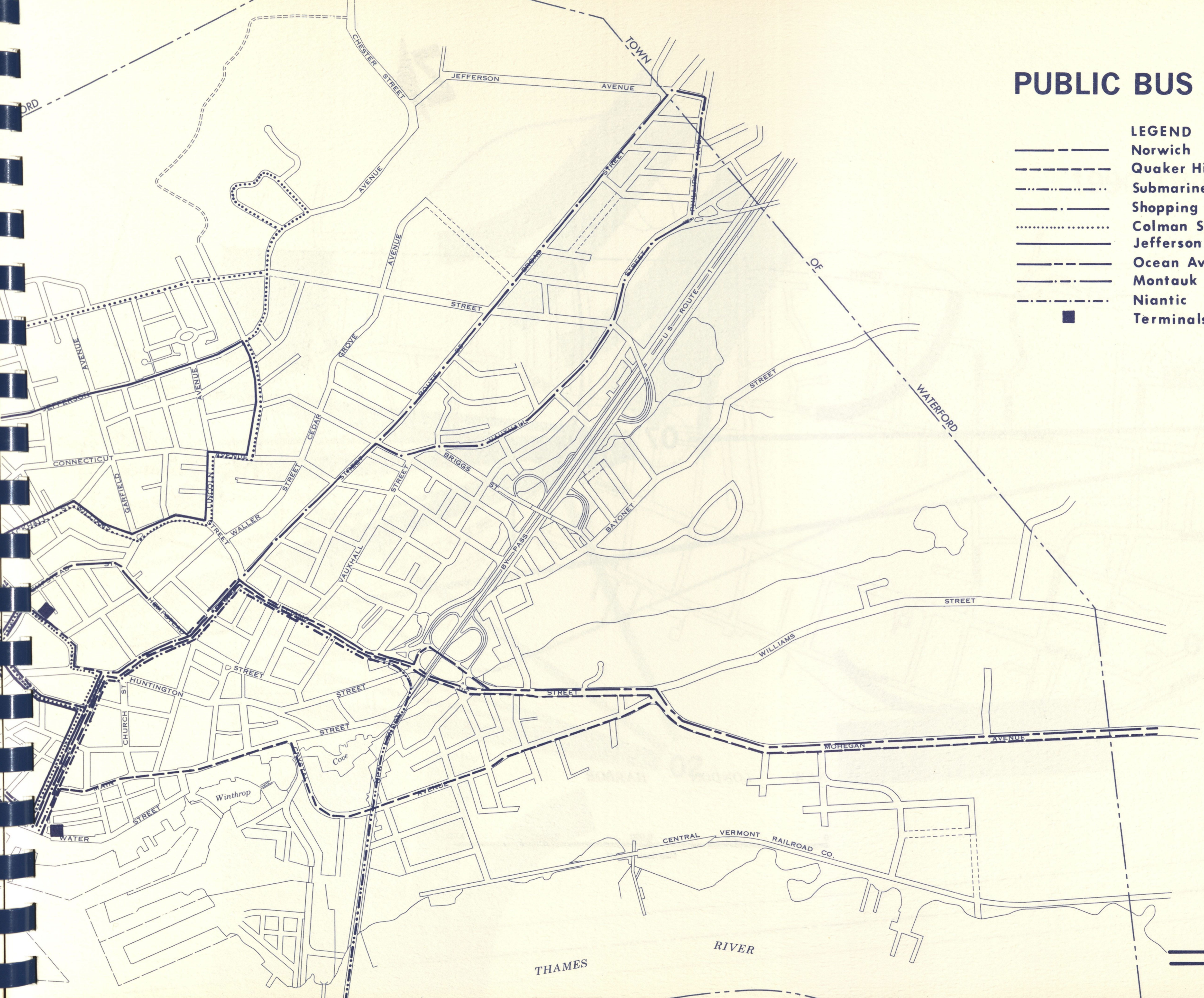
Numbered Lines Denote Travel Time
From Downtown Area in Minutes
These represent typical conditions

PLATE 7

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY


N
TOWN
OF
Alewife
Cove
PENINSULAR AVE.
STUART AVE.
HIGHLAND AVE.
NEPTUNE AVE.
PEQUOT
OCEAN AVENUE
ROUTE 213
HILL RD.
NILES
AVENUE
AVENUE
GARDNER
LOWER BOULEVARD
GLENWOOD
MONTAUK AVENUE
MONTAUK AVENUE
PEQUOT AVENUE
AVENUE
PEQUOT AVENUE
N Y N H AND H R R
WILLETTS
SHAW STREET
HOWARD ST.
BANK
BLINMAN STREET
Shaw's Cove
LONG ISLAND SOUND
NEW LONDON HARBOR
0
1,000
2,000
3,000
4,000
Map Scale in Feet


ORD
TOWN OF WATERFORD
CHESTER STREET
JEFFERSON AVENUE
AVENUE
STREET
STREET
BROAD STREET
ROUTE 32
GROVE
AVENUE
STREET
U.S. ROUTE 1
STREET
WATERFORD
BRIGGS ST
CEDAR STREET
STREET
STREET
BAYONET
BY-PASS
VAUXHALL
WALLER
LINCOLN STREET
AVENUE
AVENUE
JEFFERSON
CONNECTICUT AVENUE
GARFIELD
STREET
STREET
WILLIAMS STREET
HUNTINGTON
ST.
CHURCH
STREET
STREET
Cove
MOHEGAN AVENUE
AVENUE
MAIN
STREET
Winthrop
WATER
CENTRAL VERMONT RAILROAD CO.
THAMES RIVER

PUBLIC BUS ROUTES

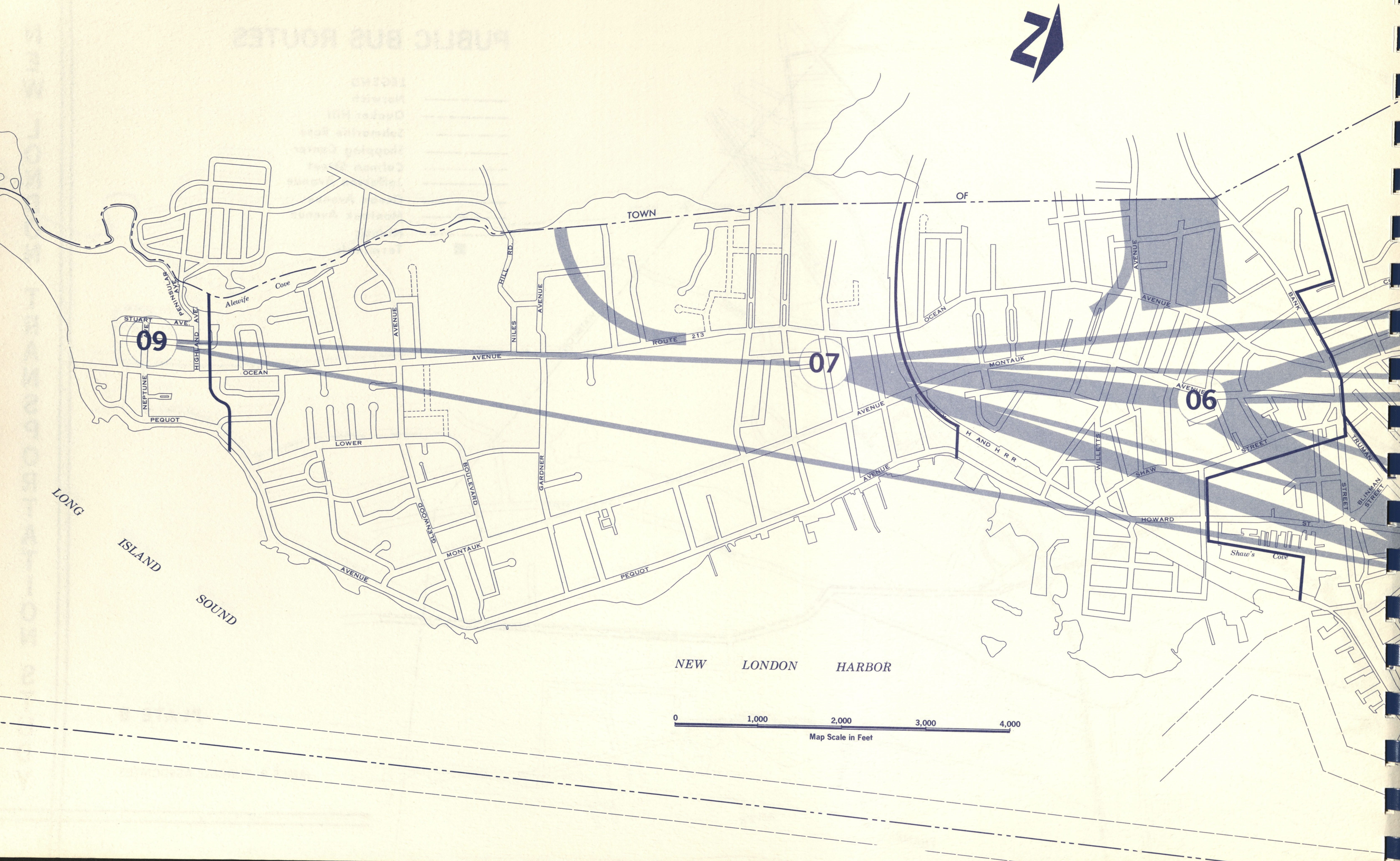
LEGEND

——— — —	Norwich
– – – – – –	Quaker Hill
–··–··–··–	Submarine Base
——— · ———	Shopping Center
···············	Colman Street
————————	Jefferson Avenue
——— — ———	Ocean Avenue
——— · — · ———	Montauk Avenue
—·—·—·—	Niantic
■	Terminals

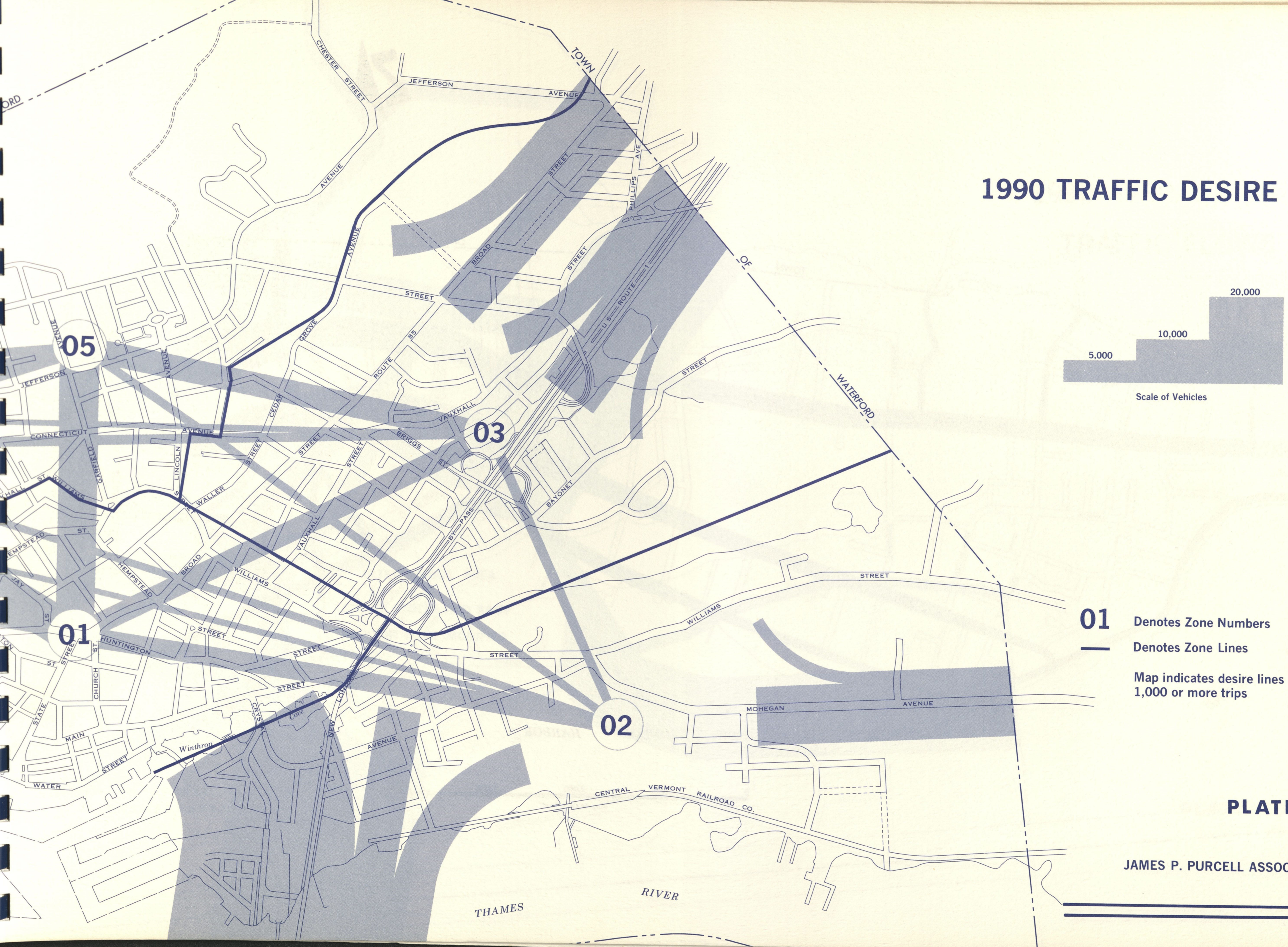
PLATE 8

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY


N
TOWN
OF
Alewife
Cove
STUART
AVE.
PENINSULAR AVE.
HIGHLAND AVE.
NEPTUNE
PEQUOT
09
OCEAN
AVENUE
ROUTE 213
HILL RD.
NILES
AVENUE
AVENUE
LOWER
BOULEVARD
GLENWOOD
GARDNER
MONTAUK
AVENUE
PEQUOT
AVENUE
07
OCEAN
AVENUE
AVENUE
MONTAUK
H AND H R R
WILLETTS
SHAW
AVENUE
06
AVENUE
AVENUE
BANK
STREET
HOWARD
ST.
TRUMAN
STREET
BLINMAN STREET
Shaw's
Cove
LONG
ISLAND
SOUND
NEW
LONDON
HARBOR
0
1,000
2,000
3,000
4,000
Map Scale in Feet

1990 TRAFFIC DESIRE LINES


20,000
10,000
5,000
Scale of Vehicles
05
03
01
02
TOWN OF WATERFORD
JEFFERSON AVENUE
CHESTER STREET
AVENUE
BROAD STREET
PHILLIPS AVE
STREET
U.S. ROUTE 1
STREET
GROVE AVENUE
ROUTE 85
VENUE
JEFFERSON
CONNECTICUT AVENUE
GARFIELD
LINCOLN
CEDAR STREET
STREET
STREET
VAUXHALL
BRIGGS ST
WILLIAMS
WALLER STREET
VAUXHALL
BY-PASS
BAYONET
STREET
HEMPSTEAD
HEMPSTEAD
ST.
BROAD
WILLIAMS
JAY
ST.
NGTON
HUNTINGTON
STREET
STREET
STREET
STREET
ST
STREET
CHURCH ST.
STATE
MAIN
STREET
WATER
Winthrop
Cove
CRYSTAL
NEW LONDON
AVENUE
WILLIAMS
STREET
STREET
MOHEGAN AVENUE
CENTRAL VERMONT RAILROAD CO.
THAMES RIVER
ORD

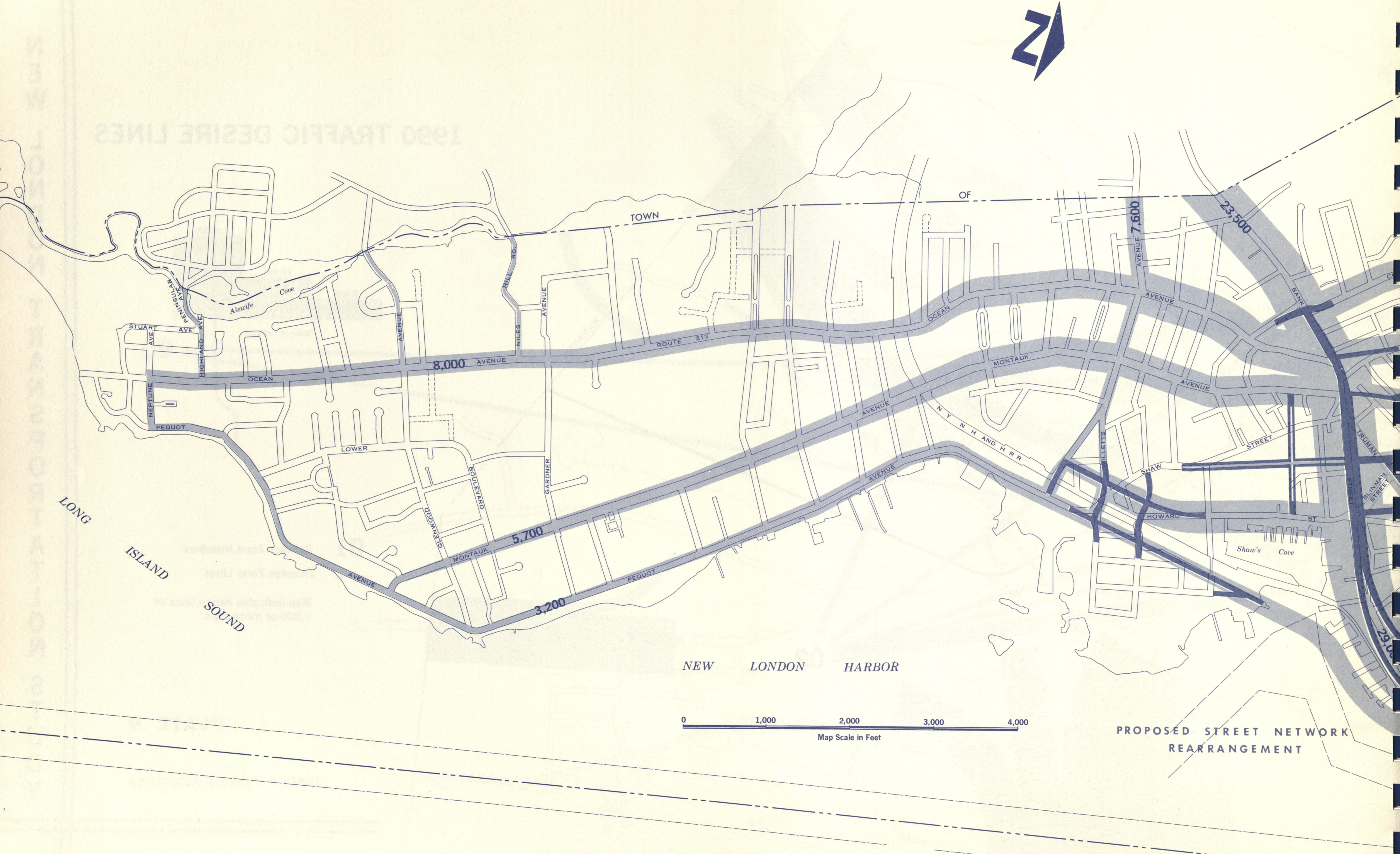
01 Denotes Zone Numbers

— Denotes Zone Lines

Map indicates desire lines of 1,000 or more trips

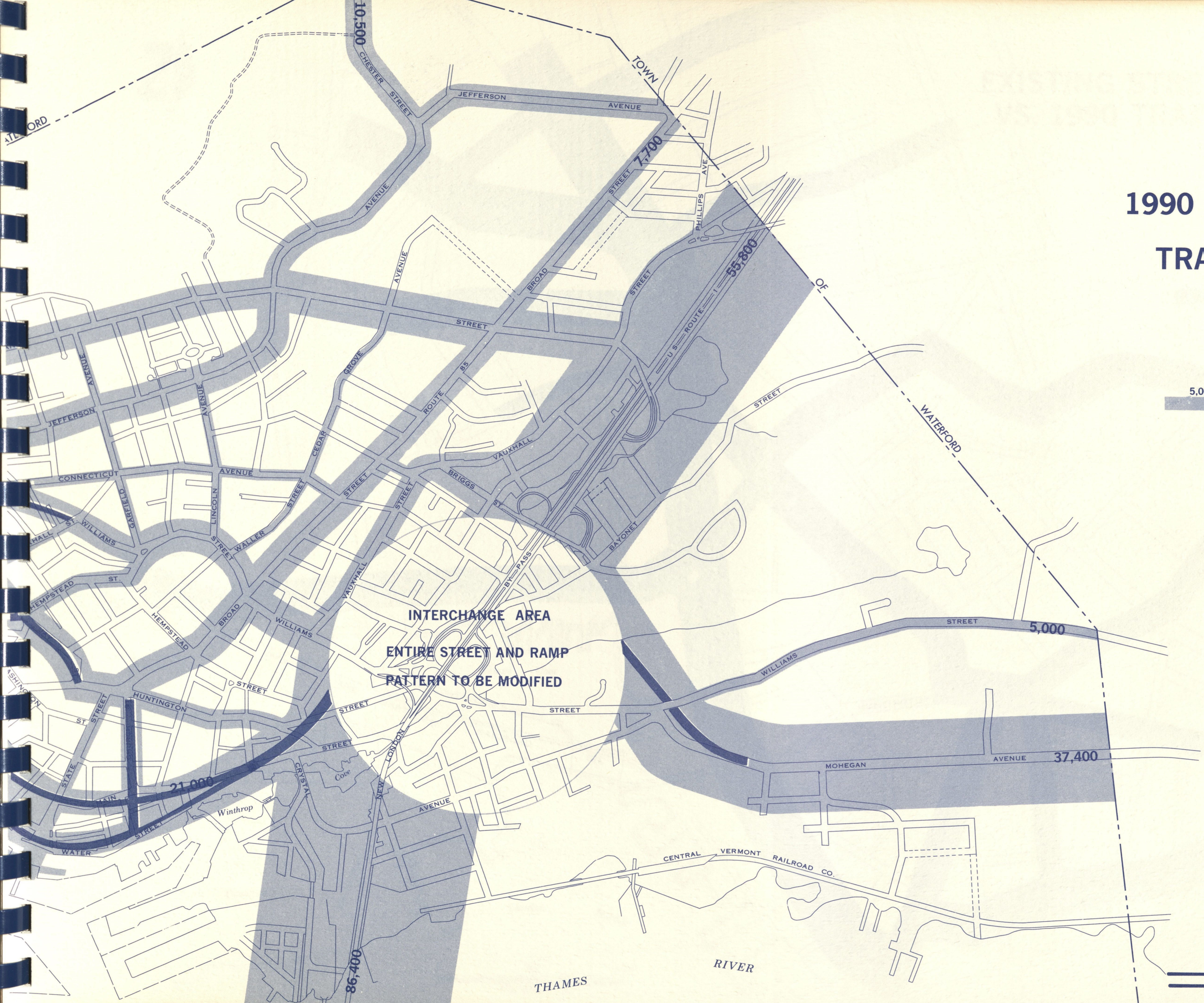
PLATE 9

JAMES P. PURCELL ASSOCIATES



TOWN
OF
7,600
23,500
AVENUE
BANK
ROUTE 213
OCEAN
8,000
AVENUE
OCEAN
MONTAUK
AVENUE
AVENUE
STREET
TRUMAN
STREET
BLINMAN STREET
SHAW
HOWARD
ST.
WILLETTS
N Y N H AND H R R
AVENUE
5,700
MONTAUK
AVENUE
PEQUOT
3,200
PEQUOT
Shaw's Cove
Alewife Cove
STUART AVE.
AVE.
PENINSULAR AVE.
HIGHLAND AVE.
NEPTUNE
PEQUOT
LOWER
BOULEVARD
GLENWOOD
GARDNER
AVENUE
AVENUE
NILES HILL RD.
AVENUE
LONG ISLAND SOUND
NEW LONDON HARBOR
0
1,000
2,000
3,000
4,000
Map Scale in Feet
N

PROPOSED STREET NETWORK
REARRANGEMENT


10,500
CHESTER STREET
JEFFERSON AVENUE
TOWN OF WATERFORD
7,700
STREET
AVE.
PHILLIPS STREET
55,800
U.S. ROUTE 1
AVENUE
BROAD
STREET
GROVE
ROUTE 85
AVENUE
JEFFERSON
CONNECTICUT
AVENUE
GARFIELD
LINCOLN
CEDAR
STREET
STREET
VAUXHALL
BRIGGS
ST.
BAYONET
STREET
WALLER
ST. WILLIAMS
HALL
HEMPSTEAD
ST.
BROAD
HEMPSTEAD
WILLIAMS
VAUXHALL
BY-PASS
INTERCHANGE AREA
ENTIRE STREET AND RAMP
PATTERN TO BE MODIFIED
STREET
5,000
WILLIAMS
STREET
HUNTINGTON
STREET
STREET
STREET
ST
STATE
MAIN
21,000
STREET
WATER
Winthrop
Cove
CRYSTAL
NEW LONDON
AVENUE
MOHEGAN
AVENUE
37,400
CENTRAL VERMONT RAILROAD CO.
86,400
THAMES
RIVER

1990 AVERAGE DAILY TRAFFIC FLOWS

20,000
10,000
5,000

Scale of Vehicles

PLATE 10

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY

EXISTING STREET CAPACITIES VS. 1990 TRAFFIC VOLUMES

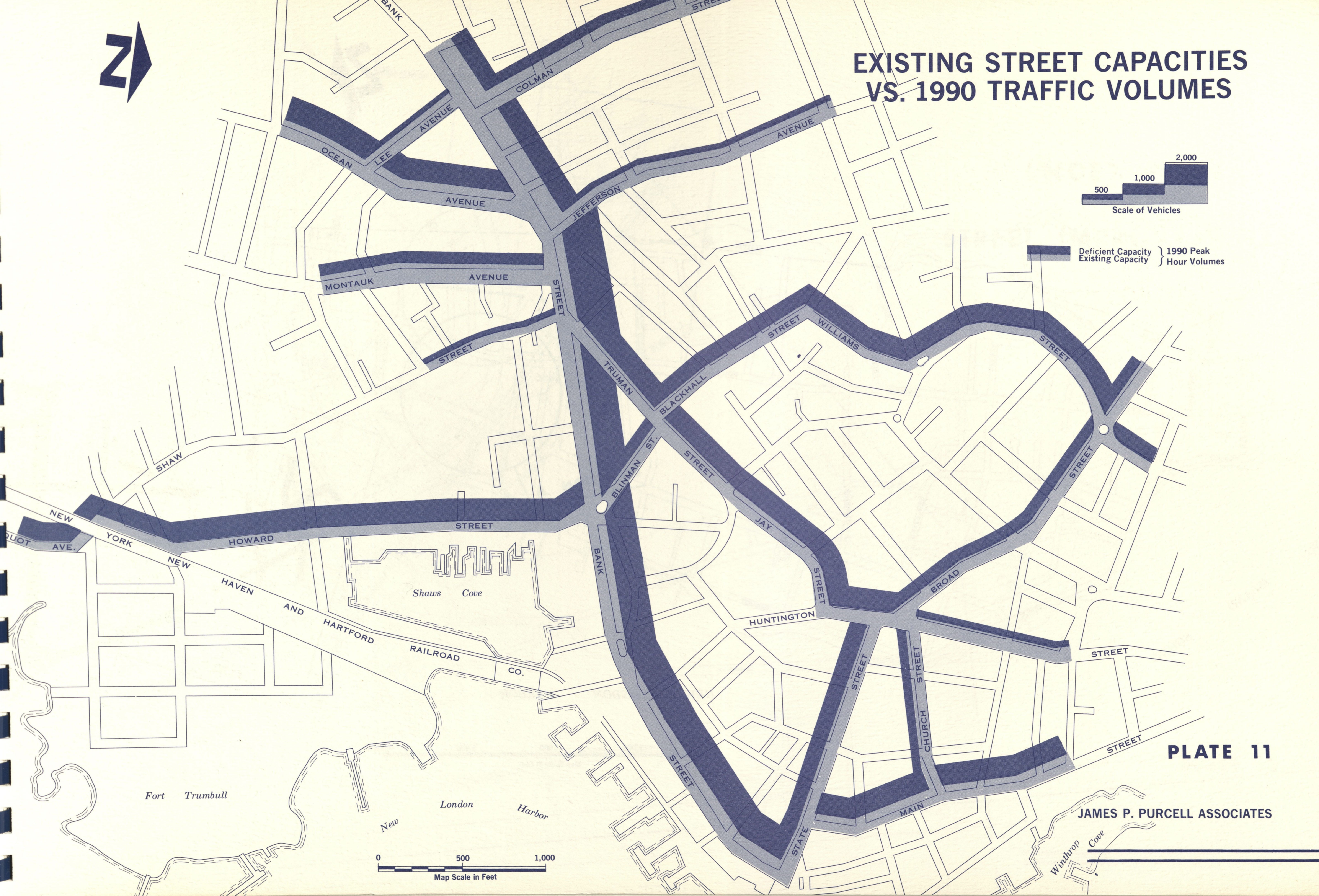
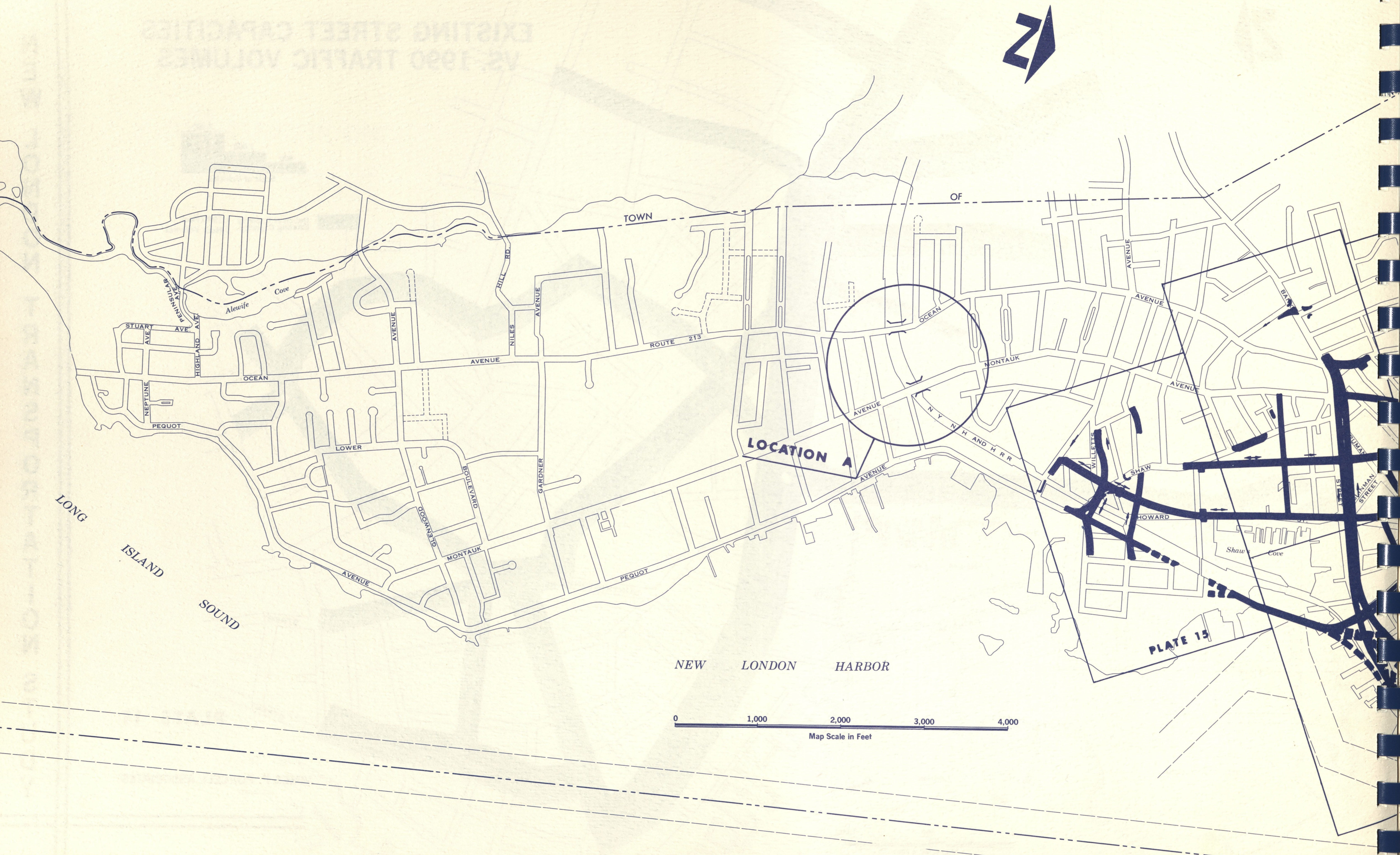

N
BANK
STREET
COLMAN
AVENUE
LEE
OCEAN
AVENUE
JEFFERSON
AVENUE
MONTAUK
AVENUE
STREET
STREET
TRUMAN
BLACKHALL
WILLIAMS
STREET
STREET
STREET
BLINMAN ST.
STREET
SHAW
NEW YORK
QUOT AVE.
HOWARD
STREET
BANK
JAY
STREET
BROAD
HUNTINGTON
STREET
STREET
STREET
CHURCH
STREET
MAIN
STREET
STATE
NEW HAVEN AND HARTFORD RAILROAD CO.
Shaws Cove
Fort Trumbull
New London Harbor
Winthrop Cove
2,000
1,000
500
Scale of Vehicles
Deficient Capacity
Existing Capacity
1990 Peak Hour Volumes
0
500
1,000
Map Scale in Feet

PLATE 11

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY


N
TOWN
OF
Alewife
Cove
PENINSULAR AVE
STUART AVE
AVE
AVE
HIGHLAND AVE
AVE
NEPTUNE
PEQUOT
OCEAN
AVENUE
AVENUE
NILES
HILL RD
AVENUE
ROUTE 213
OCEAN
MONTAUK
AVENUE
AVENUE
AVENUE
AVENUE
N Y N H AND H R R
LOCATION A
AVENUE
LOWER
BOULEVARD
GARDNER
GLENWOOD
MONTAUK
AVENUE
PEQUOT
WILLETTS
SHAW
HOWARD
ST.
BANK
STREET
HUNTINGTON
HEMPSTEAD
STREET
Shaw's
Cove
PLATE 15
LONG
ISLAND
SOUND
NEW
LONDON
HARBOR
0
1,000
2,000
3,000
4,000
Map Scale in Feet

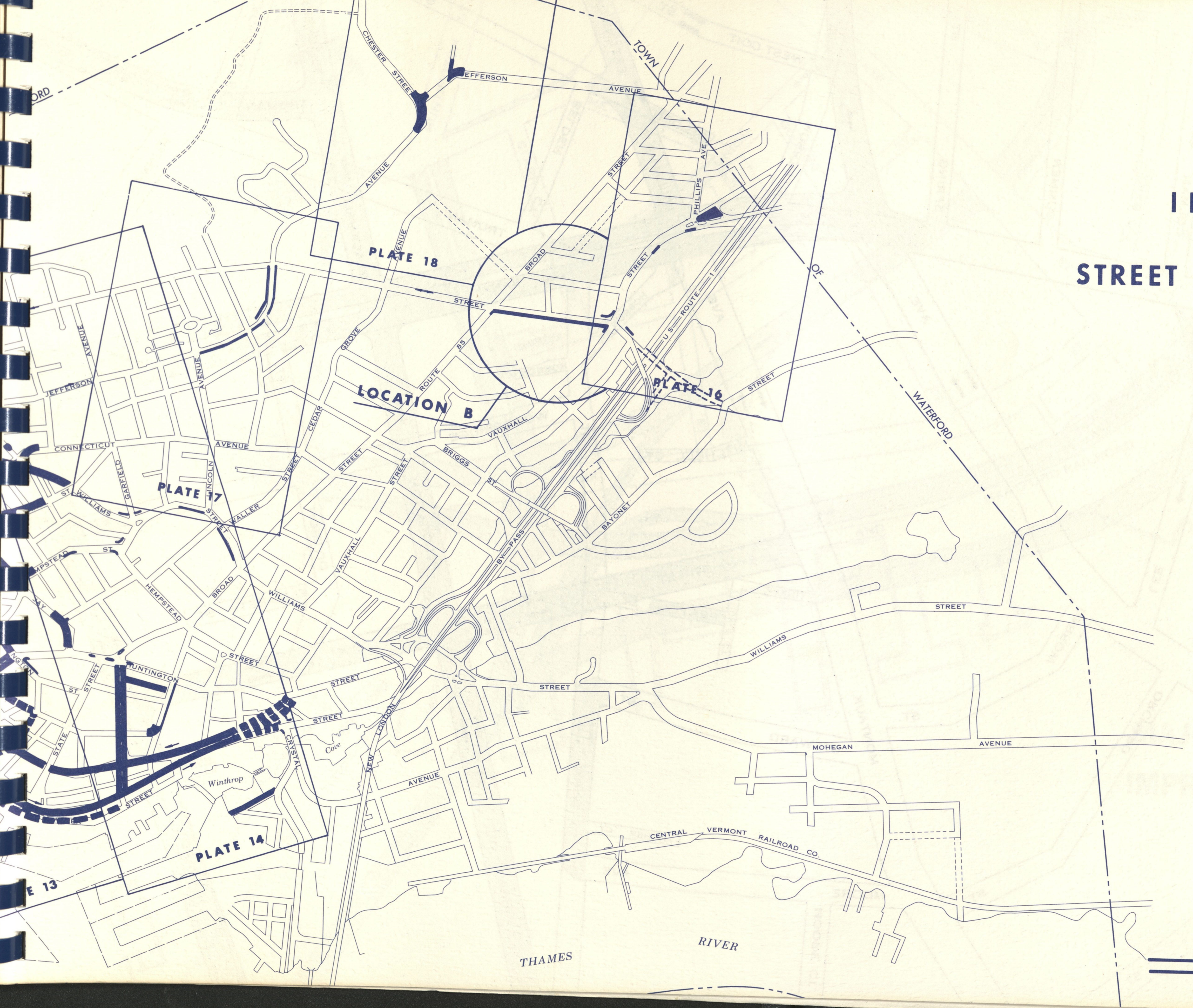


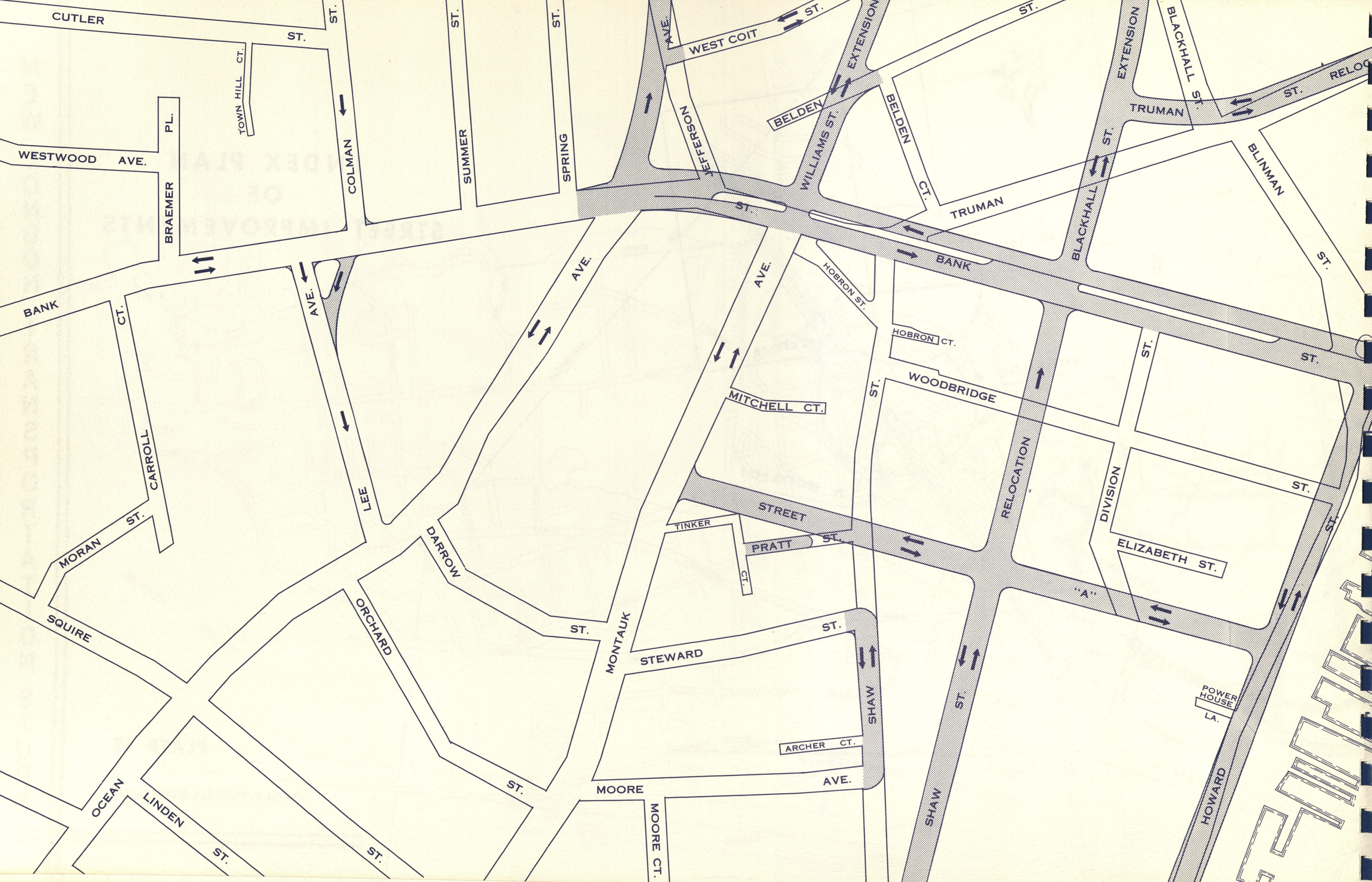
PLATE 18
PLATE 16
PLATE 17
PLATE 14
E 13
LOCATION B
TOWN OF WATERFORD
RD
CHESTER STREET
JEFFERSON AVENUE
AVENUE
STREET
BROAD
PHILLIPS AVE
STREET
U. S. ROUTE 1
ROUTE 85
GROVE
CEDAR STREET
VAUXHALL
BRIGGS ST
STREET
BY-PASS
BAYONET
STREET
JEFFERSON
CONNECTICUT AVENUE
AVENUE
AVENUE
GARFIELD
LINCOLN
WILLIAMS ST
WALLER
ST
HEMPSTEAD
HEMPSTEAD
BROAD
WILLIAMS
STREET
HUNTINGTON
ST
STREET
STREET
STREET
STATE
CRYSTAL
Cove
Winthrop
STREET
NEW LONDON
AVENUE
WILLIAMS
STREET
STREET
MOHEGAN AVENUE
CENTRAL VERMONT RAILROAD CO
THAMES RIVER

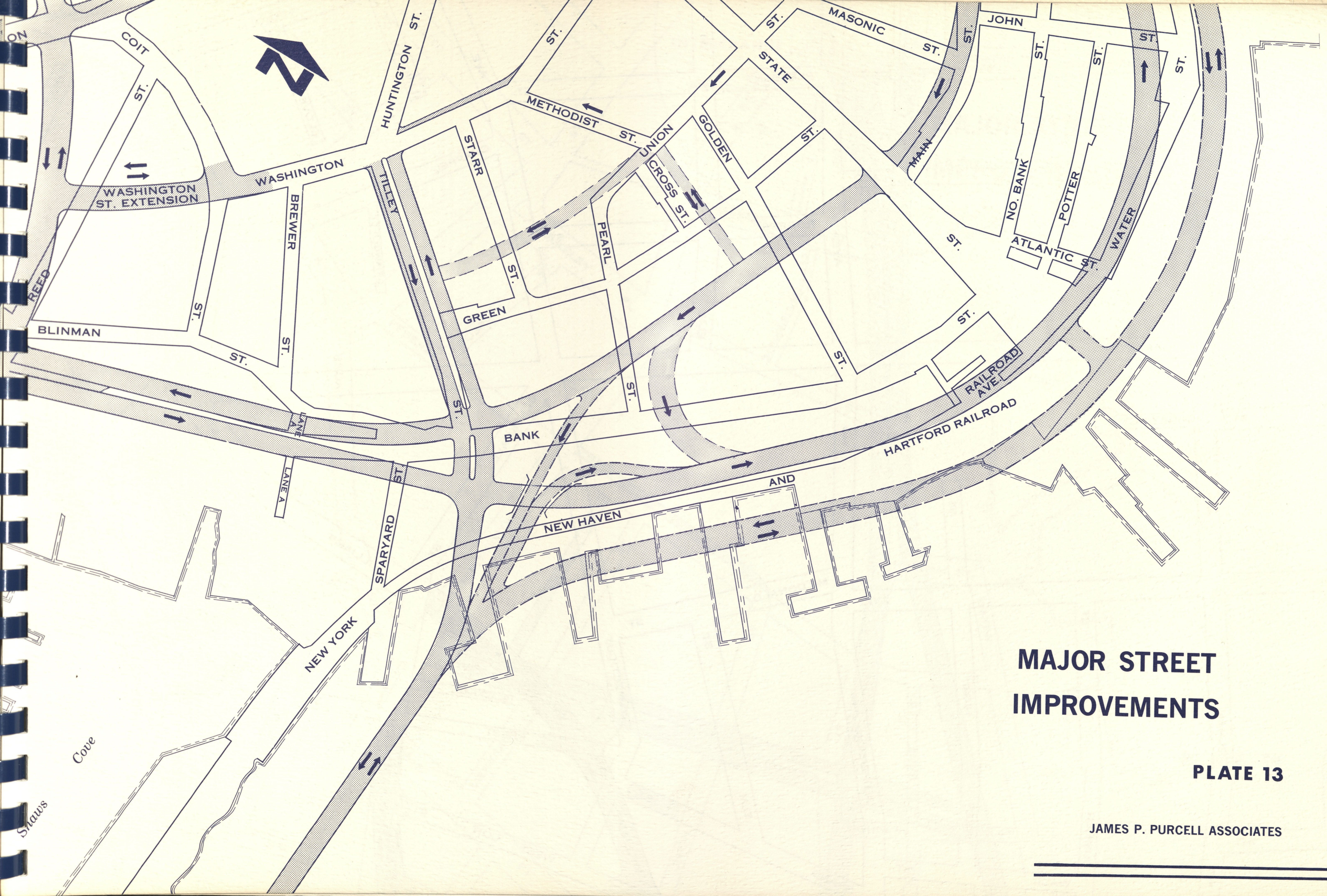
INDEX PLAN OF STREET IMPROVEMENTS

PLATE 12

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY

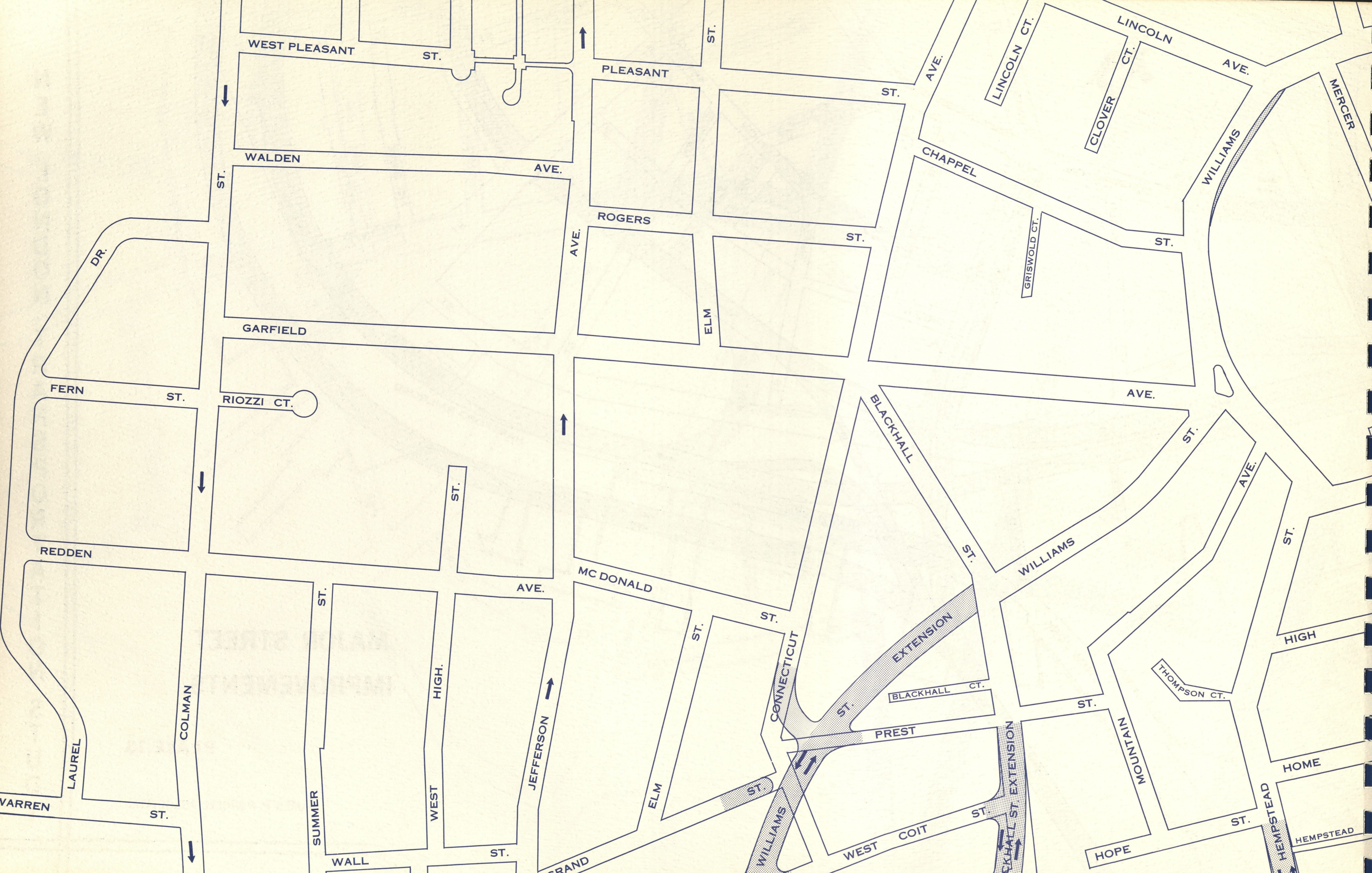

CUTLER ST.
TOWN HILL CT.
PL.
BRAEMER
WESTWOOD AVE.
COLMAN
SUMMER ST.
SPRING ST.
BANK
CT.
CARROLL
MORAN ST.
SQUIRE
OCEAN
LINDEN ST.
ST.
LEE AVE.
AVE.
DARROW
ST.
ORCHARD
ST.
MONTAUK AVE.
STEWARD ST.
TINKER
PRATT ST.
CT.
MITCHELL CT.
STREET
MOORE AVE.
MOORE CT.
ARCHER CT.
SHAW
AVE.
WEST COIT ST.
JEFFERSON
WILLIAMS ST.
EXTENSION
BELDEN
BELDEN
CT.
ST.
BANK
TRUMAN
HOBRON ST.
HOBRON CT.
ST.
WOODBRIDGE
ST.
RELOCATION
SHAW
ST.
DIVISION
ELIZABETH ST.
"A"
ST.
BLACKHALL ST.
EXTENSION
BLACKHALL ST.
TRUMAN
ST.
RELOC T.
BLINMAN
ST.
ST.
ST.
POWER HOUSE LA.
HOWARD


ON
COIT
ST.
HUNTINGTON ST.
ST.
WASHINGTON ST. EXTENSION
WASHINGTON
METHODIST ST.
STARR ST.
TILLEY ST.
BREWER ST.
UNION
CROSS ST.
GOLDEN ST.
PEARL ST.
STATE
MASONIC ST.
JOHN
ST.
MAIN ST.
NO. BANK ST.
POTTER ST.
ATLANTIC ST.
WATER ST.
ST.
ST.
ST.
REED
BLINMAN ST.
ST.
GREEN
BANK ST.
ST.
LANE A
LANE A
SPARYARD ST.
RAILROAD AVE.
HARTFORD RAILROAD
AND
NEW HAVEN
NEW YORK
Shaws Cove

MAJOR STREET IMPROVEMENTS

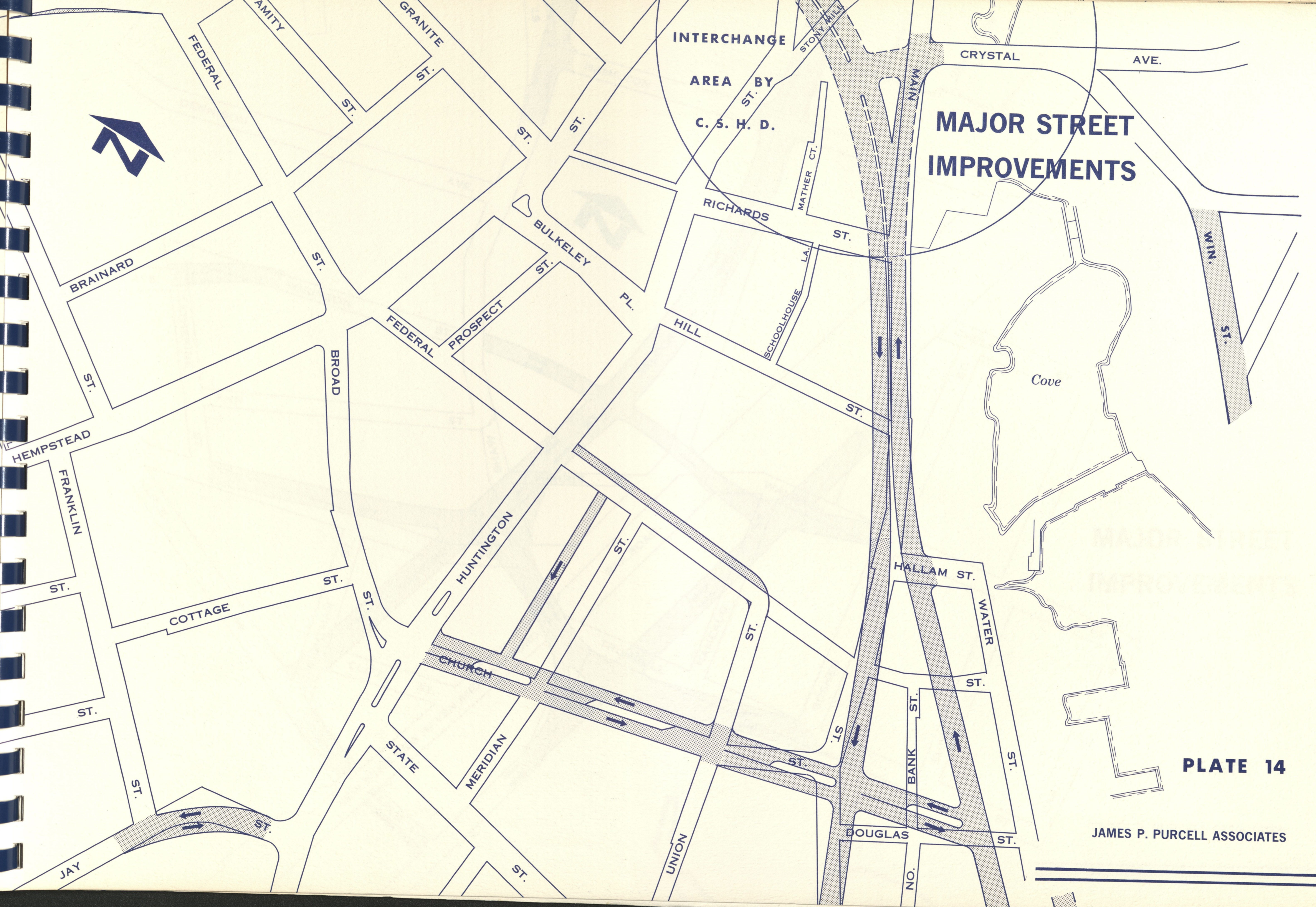
PLATE 13

JAMES P. PURCELL ASSOCIATES


WEST PLEASANT ST.
PLEASANT ST.
ST.
AVE.
LINCOLN CT.
LINCOLN AVE.
CLOVER CT.
MERCER
CHAPPEL ST.
WILLIAMS
WALDEN AVE.
ST.
ROGERS ST.
AVE.
GRISWOLD CT.
DR.
GARFIELD
ELM
AVE.
FERN ST.
RIOZZI CT.
BLACKHALL ST.
ST.
AVE.
ST.
WILLIAMS
ST.
REDDEN
MC DONALD ST.
AVE.
ST.
ST.
CONNECTICUT
EXTENSION
ST.
HIGH
BLACKHALL CT.
ST.
THOMPSON CT.
PREST
MOUNTAIN
HOME
COLMAN
LAUREL
WARREN ST.
SUMMER
WEST
HIGH
JEFFERSON
ELM
ST.
WILLIAMS
WEST COIT ST.
EXTENSION
BLACKHALL ST
HOPE ST.
HEMPSTEAD
HEMPSTEAD
WALL ST.
GRAND

NEW LONDON TRANSPORTATION STUDY

MAJOR STREET IMPROVEMENTS

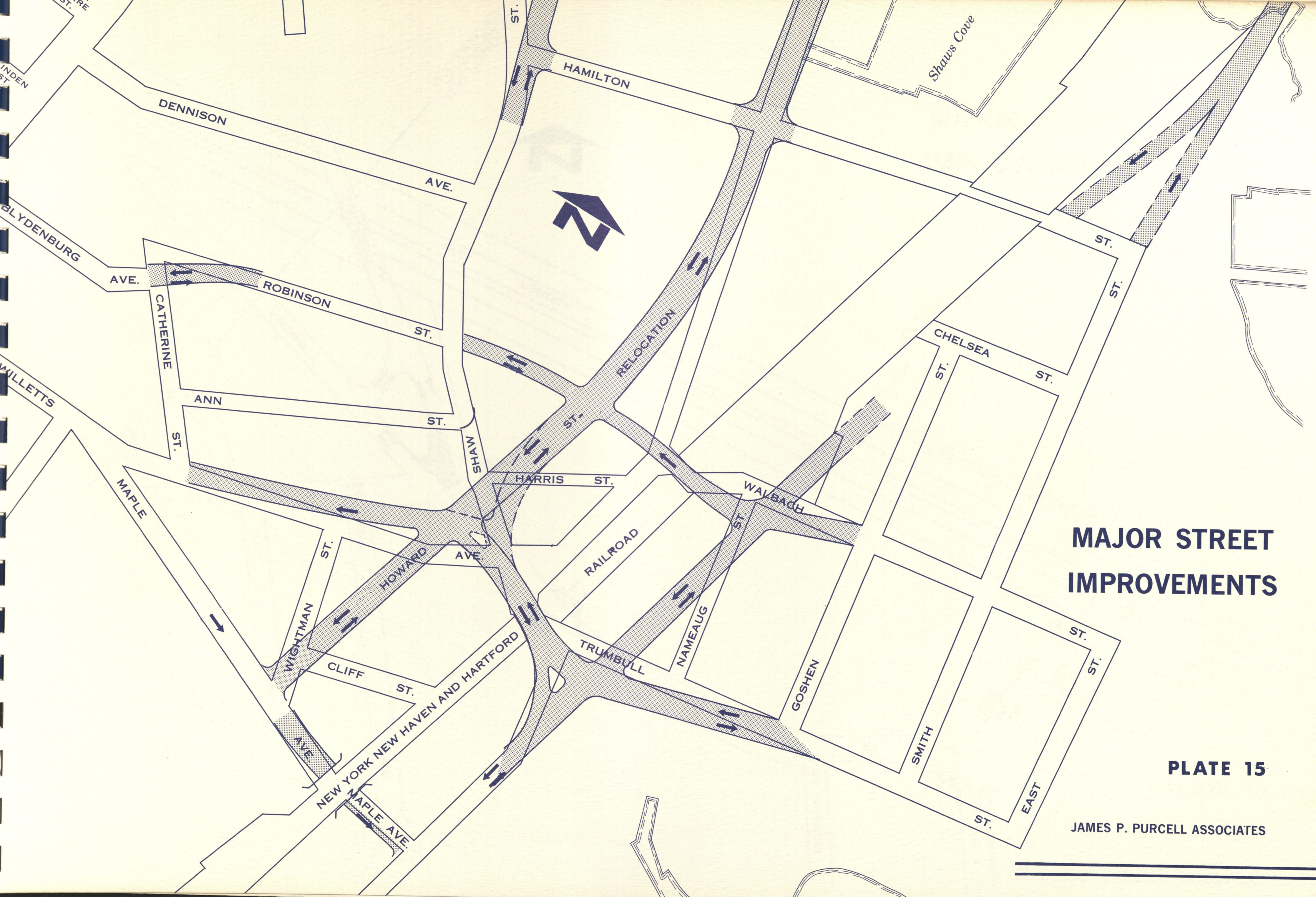


INTERCHANGE AREA BY C. S. H. D.
CRYSTAL AVE.
MAIN
STONY HILL
ST.
MATHER CT.
RICHARDS ST.
SCHOOLHOUSE LA.
HILL ST.
WM. ST.
Cove
HALLAM ST.
WATER ST.
ST.
BANK ST.
DOUGLAS ST.
NO.
UNION
ST.
CHURCH ST.
STATE ST.
MERIDIAN
HUNTINGTON ST.
ST.
BULKELEY PL.
PROSPECT ST.
FEDERAL ST.
BROAD ST.
GRANITE ST.
AMITY ST.
FEDERAL ST.
BRAINARD ST.
HEMPSTEAD ST.
FRANKLIN ST.
COTTAGE ST.
ST.
JAY ST.
ST.
N

PLATE 14

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY


Shaws Cove
HAMILTON
ST.
DENNISON
AVE.
LINDEN ST
BLYDENBURG
AVE.
ROBINSON
ST.
CATHERINE
ST.
ANN
ST.
WILLETTS
SHAW
HARRIS
ST.
RELOCATION
ST.
ST.
CHELSEA
ST.
ST.
ST.
WALBACH
ST.
RAILROAD
MAPLE
HOWARD
AVE.
ST.
WIGHTMAN
CLIFF
ST.
AVE.
NEW YORK NEW HAVEN AND HARTFORD
MAPLE AVE.
TRUMBULL
NAMEAUG
ST.
GOSHEN
SMITH
EAST
ST.
ST.
ST.

MAJOR STREET IMPROVEMENTS

PLATE 15

JAMES P. PURCELL ASSOCIATES

MAJOR STREET IMPROVEMENTS

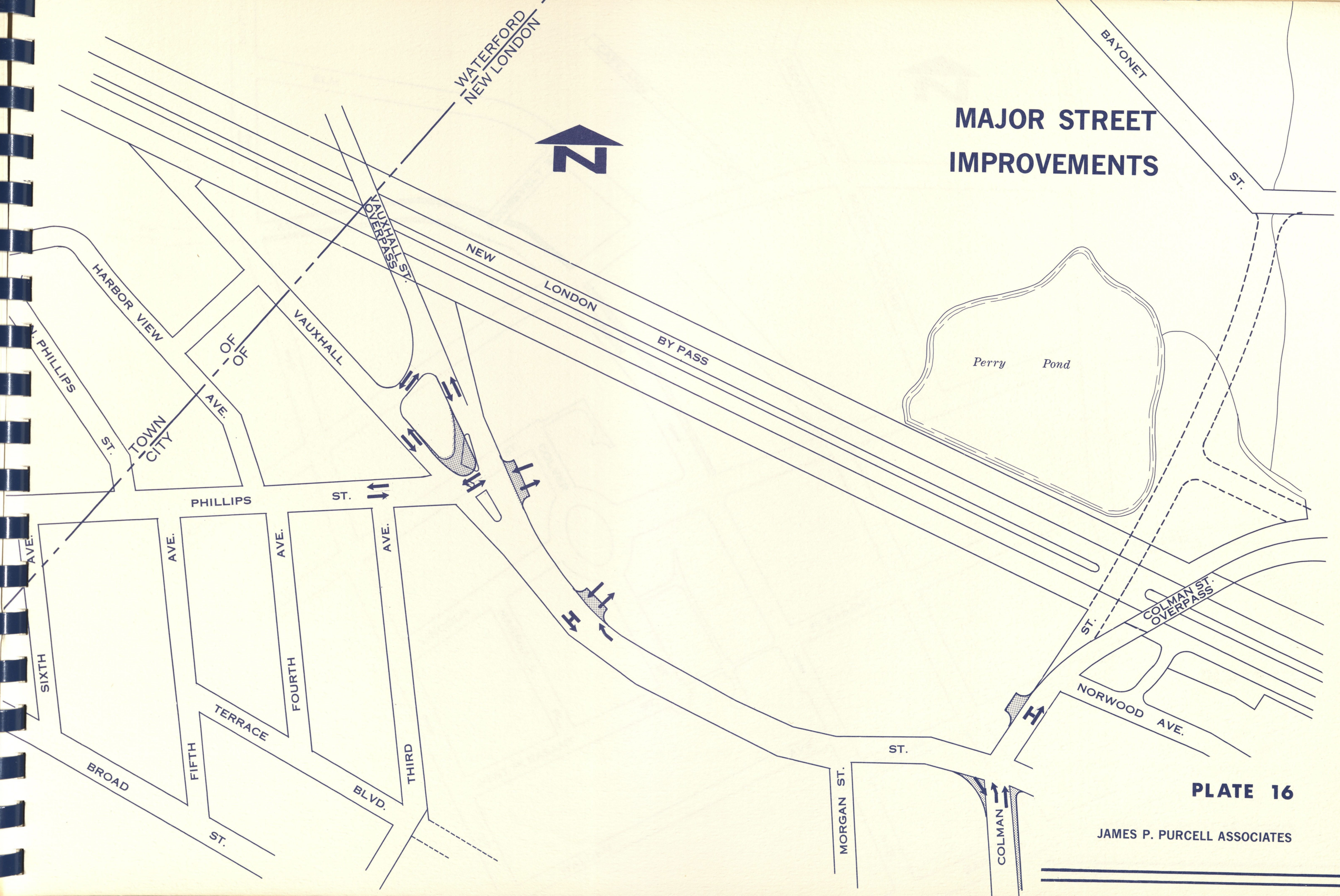
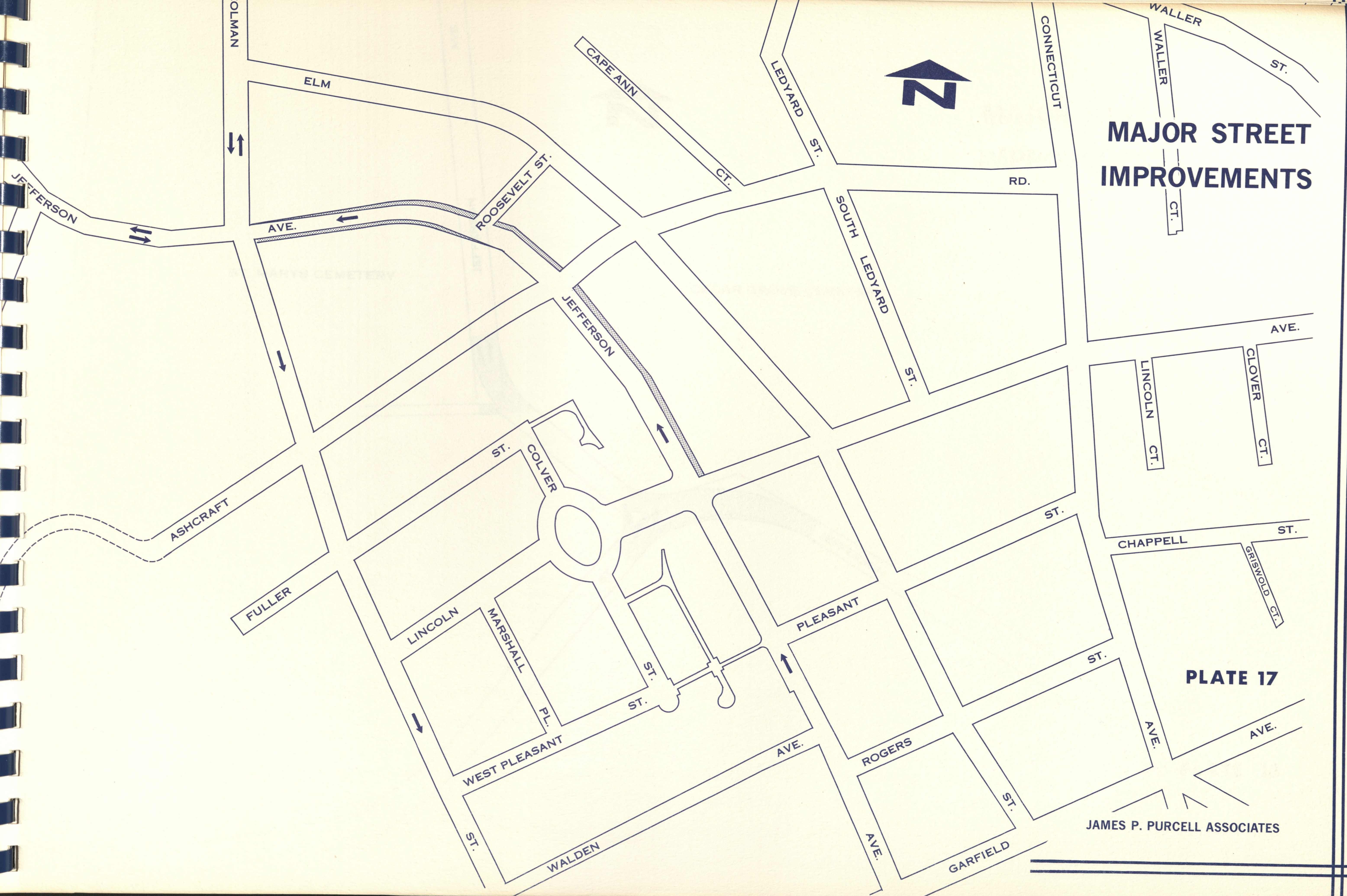

WATERFORD
NEW LONDON
TOWN OF
CITY OF
VAUXHALL ST. OVERPASS
NEW LONDON BY PASS
VAUXHALL
AVE.
HARBOR VIEW
ST.
. PHILLIPS
AVE.
PHILLIPS ST.
SIXTH AVE.
FIFTH AVE.
FOURTH AVE.
THIRD AVE.
TERRACE BLVD.
BROAD ST.
ST.
MORGAN ST.
COLMAN ST.
ST.
COLMAN ST. OVERPASS
NORWOOD AVE.
BAYONET ST.
Perry Pond

PLATE 16

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY



OLMAN
ELM
CAPE ANN CT.
LEDYARD ST.
CONNECTICUT
WALLER ST.
WALLER CT.
JEFFERSON
AVE.
ROOSEVELT ST.
RD.
SOUTH LEDYARD ST.
AVE.
JEFFERSON
LINCOLN CT.
CLOVER CT.
ASHCRAFT
FULLER
COLVER
ST.
LINCOLN
MARSHALL PL.
ST.
WEST PLEASANT ST.
PLEASANT
ST.
CHAPPELL ST.
GRISWOLD CT.
ST.
AVE.
ROGERS ST.
AVE.
WALDEN
AVE.
GARFIELD
ST.
AVE.
N

MAJOR STREET IMPROVEMENTS

PLATE 17

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY

MAJOR STREET IMPROVEMENTS

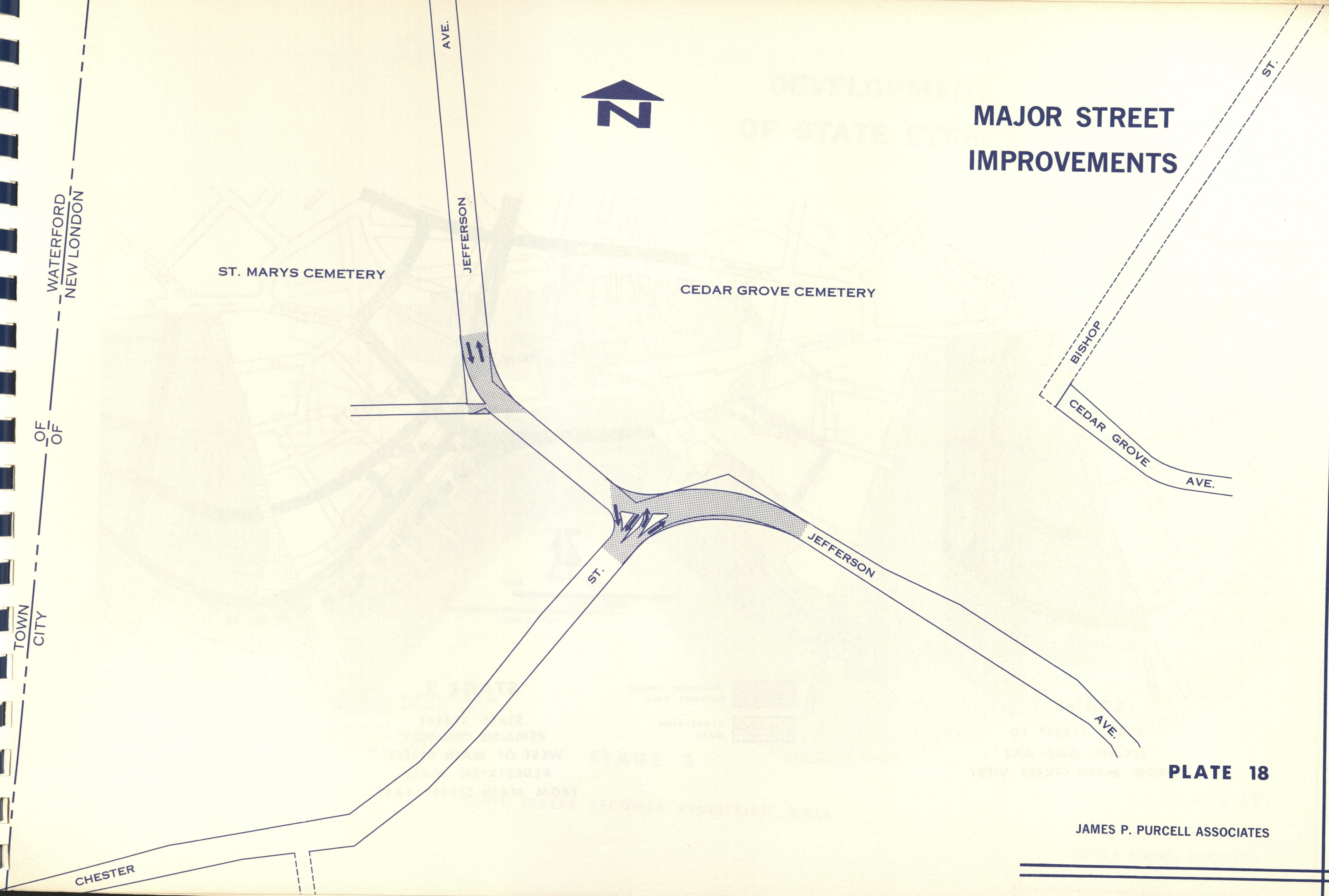
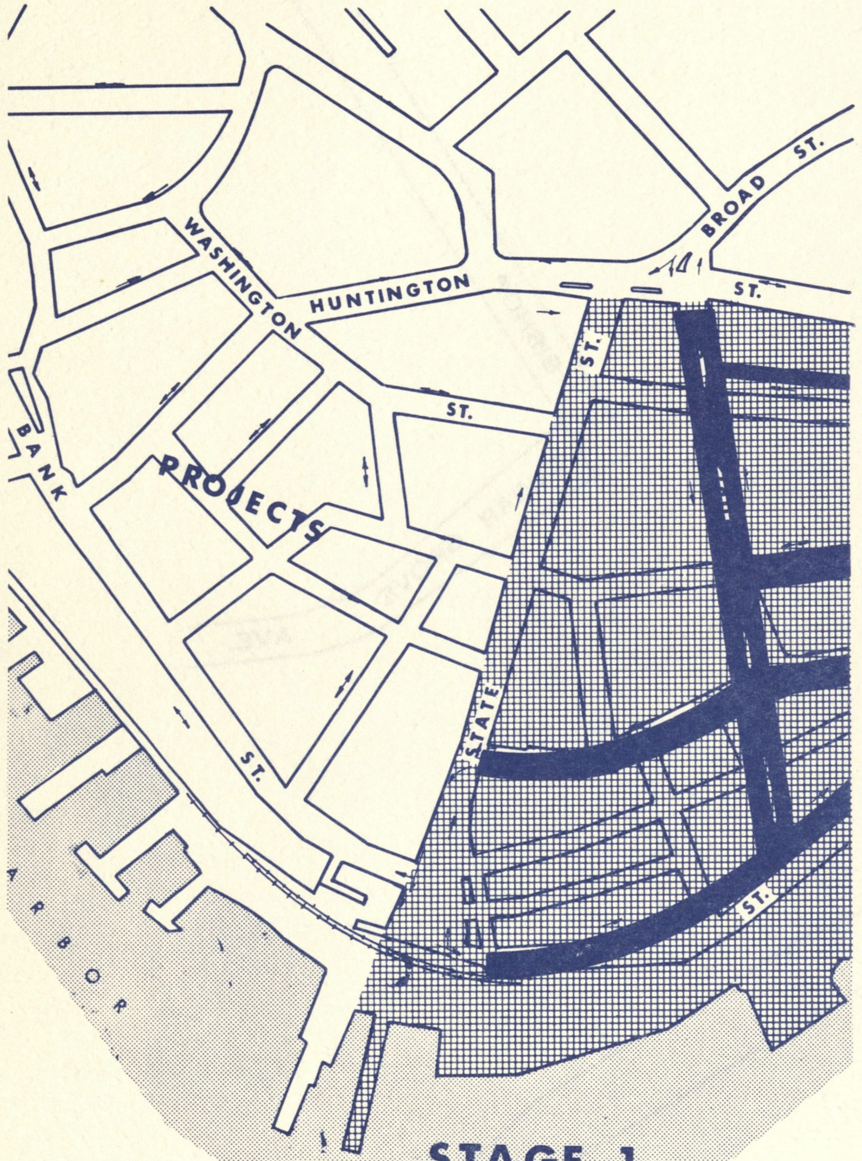

N
AVE.
JEFFERSON
ST. MARYS CEMETERY
CEDAR GROVE CEMETERY
TOWN OF WATERFORD
CITY OF NEW LONDON
ST.
JEFFERSON
AVE.
CHESTER
BISHOP
ST.
CEDAR GROVE
AVE.

PLATE 18

JAMES P. PURCELL ASSOCIATES

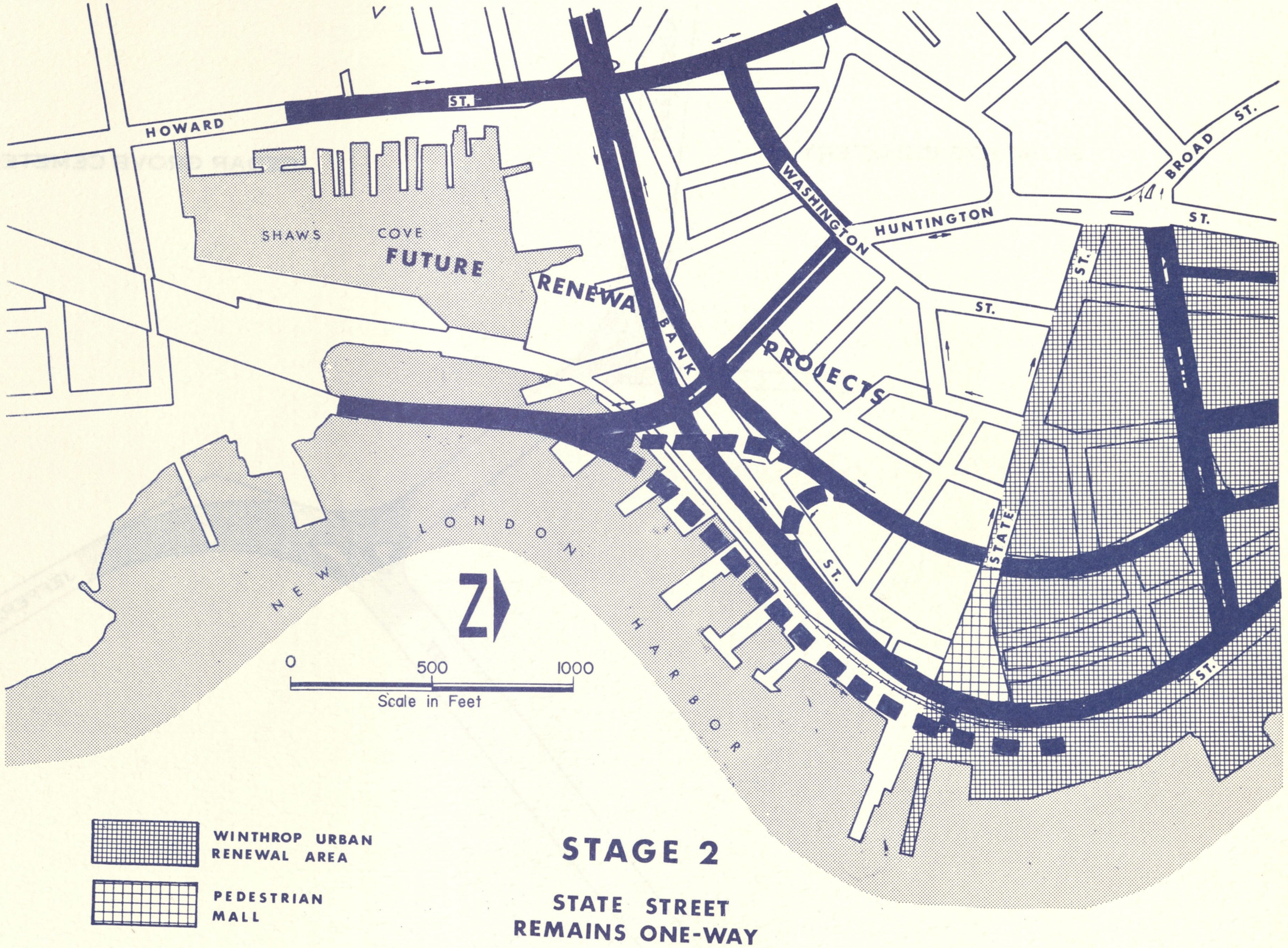
NEW LONDON TRANSPORTATION STUDY



BROAD ST.
WASHINGTON
HUNTINGTON
ST.
ST.
BANK
PROJECTS
STATE
ST.
ST.
ARBOR

STAGE 1

STATE STREET TO BECOME ONE-WAY FROM MAIN STREET-WEST



HOWARD
ST.
SHAWS COVE
FUTURE
RENEWAL
BANK
WASHINGTON
HUNTINGTON
BROAD ST.
ST.
ST.
PROJECTS
STATE
ST.
ST.
NEW LONDON HARBOR
N
0
500
1000
Scale in Feet

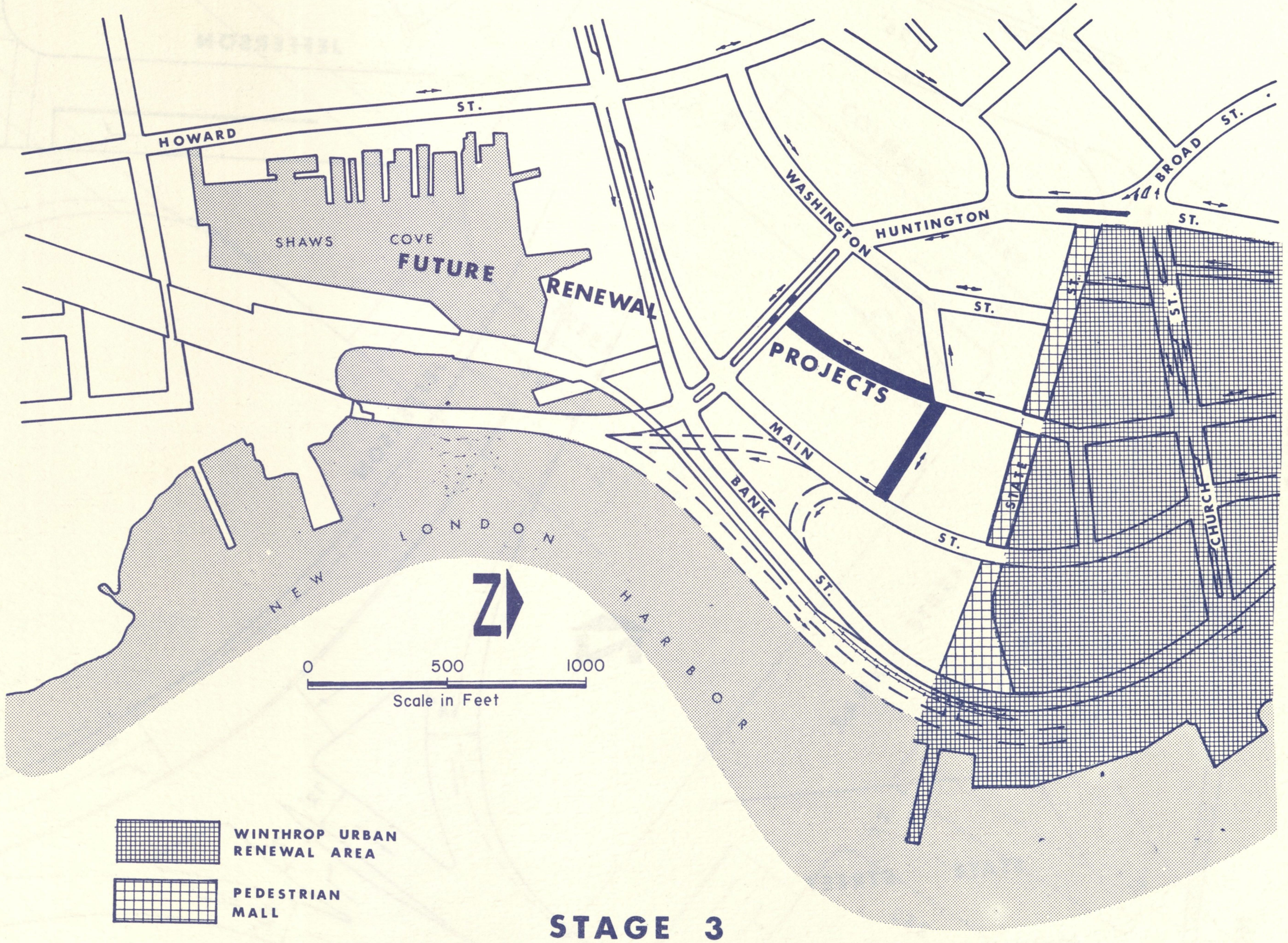
▩ WINTHROP URBAN RENEWAL AREA

⊞ PEDESTRIAN MALL

STAGE 2

STATE STREET REMAINS ONE-WAY WEST OF MAIN STREET PEDESTRIAN MALL FROM MAIN STREET-EAST

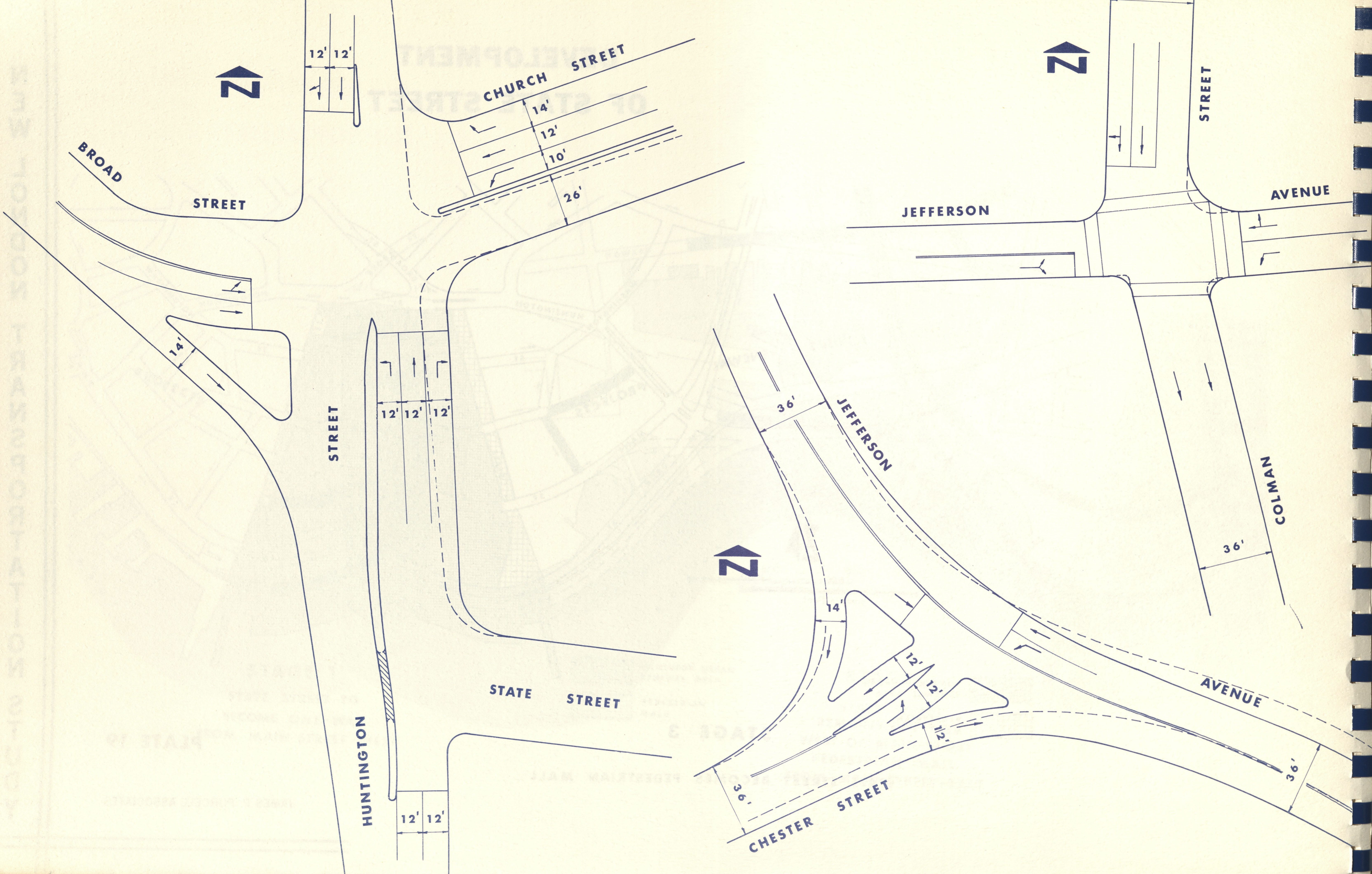
DEVELOPMENT OF STATE STREET


HOWARD ST.
SHAWS COVE
FUTURE RENEWAL PROJECTS
WASHINGTON
HUNTINGTON ST.
BROAD ST.
ST.
STATE ST.
CHURCH ST.
MAIN ST.
BANK ST.
NEW LONDON HARBOR
N
0
500
1000
Scale in Feet
WINTHROP URBAN RENEWAL AREA
PEDESTRIAN MALL

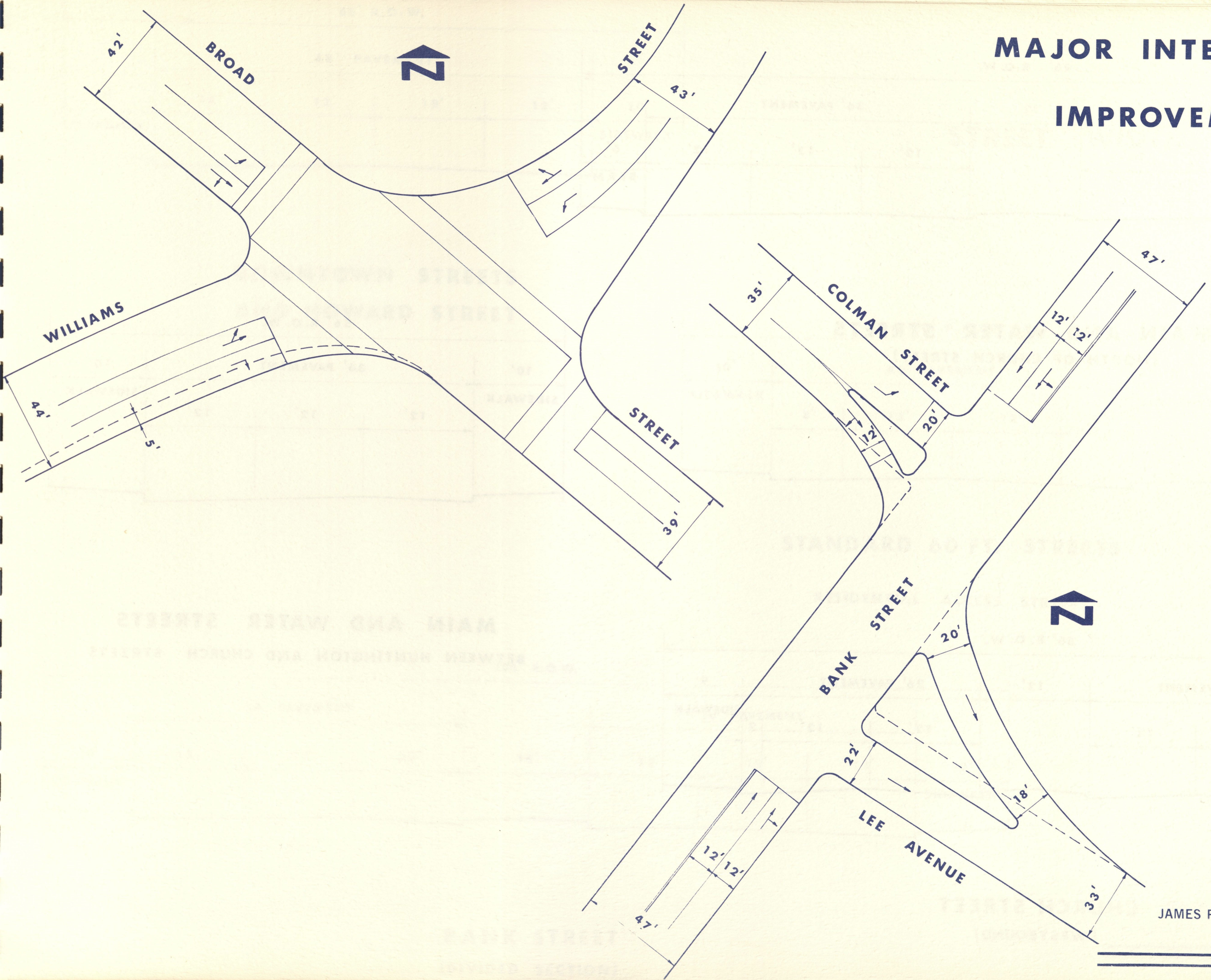
STAGE 3

STATE STREET BECOMES PEDESTRIAN MALL

PLATE 19


N
12' 12'
CHURCH STREET
14'
12'
10'
26'
BROAD STREET
14'
STREET
12' 12' 12'
HUNTINGTON
STATE STREET
12' 12'
N
STREET
JEFFERSON AVENUE
COLMAN
36'
N
36'
JEFFERSON
14'
12'
12'
12'
AVENUE
36'
36'
CHESTER STREET

MAJOR INTERSECTION IMPROVEMENTS

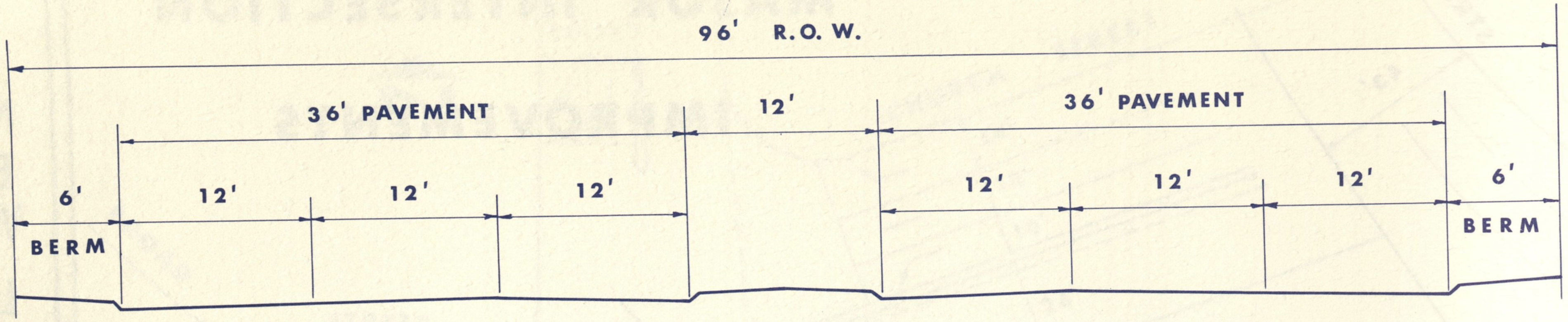


N
42'
BROAD
STREET
43'
WILLIAMS
44'
5'
STREET
39'
35'
COLMAN
STREET
47'
12'
12'
20'
12'
BANK
STREET
N
20'
22'
18'
LEE
AVENUE
12'
12'
47'
33'

PLATE 20

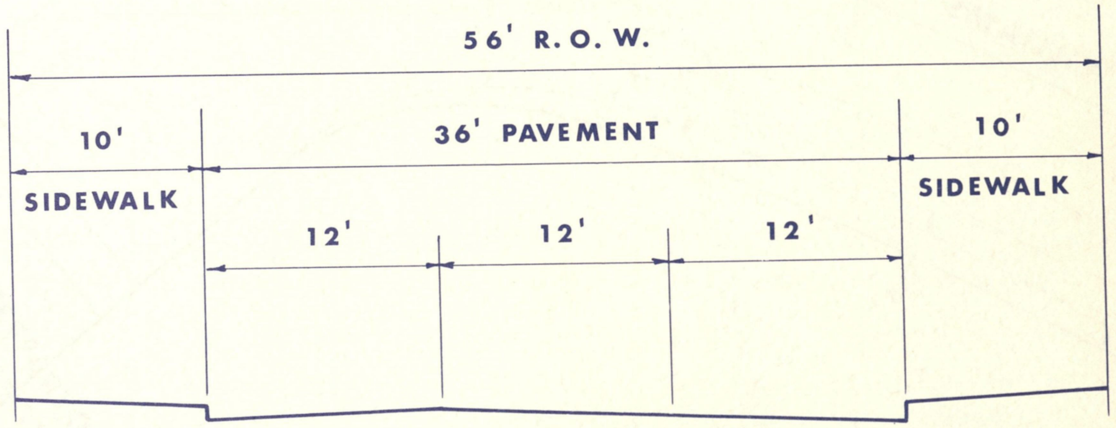
JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY


96' R.O.W.
36' PAVEMENT
12'
36' PAVEMENT
6'
12'
12'
12'
12'
12'
12'
6'
BERM
BERM

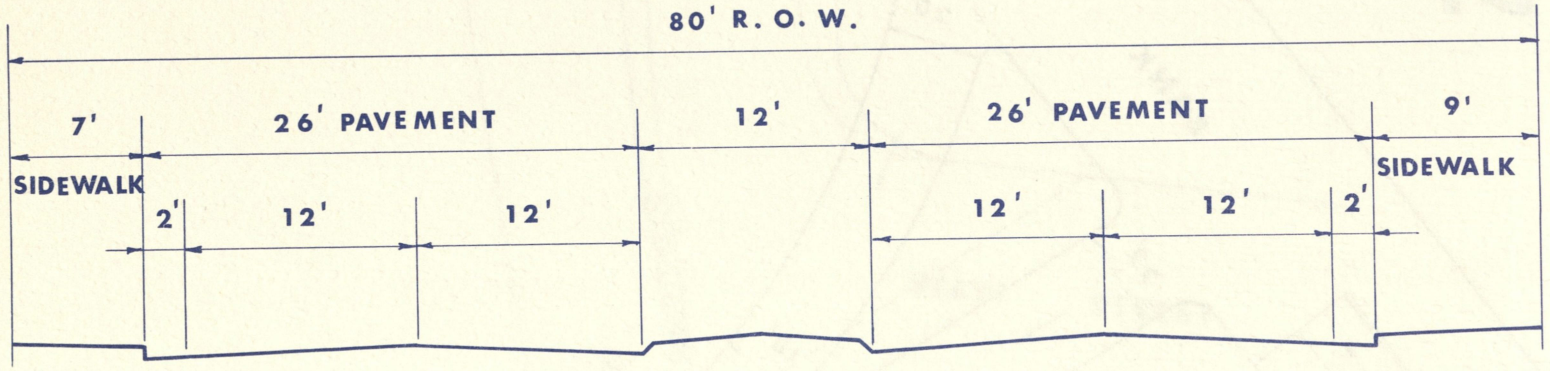
MAIN AND WATER STREETS

(NORTH OF CHURCH STREET)


56' R.O.W.
10'
36' PAVEMENT
10'
SIDEWALK
SIDEWALK
12'
12'
12'

MAIN AND WATER STREETS

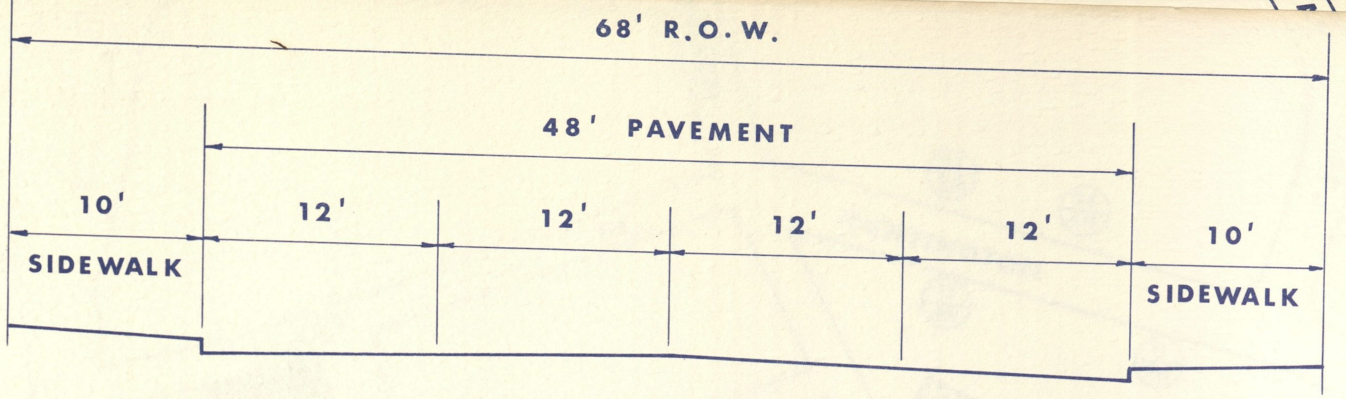
BETWEEN HUNTINGTON AND CHURCH STREETS


80' R.O.W.
7'
26' PAVEMENT
12'
26' PAVEMENT
9'
SIDEWALK
SIDEWALK
2'
12'
12'
12'
12'
2'

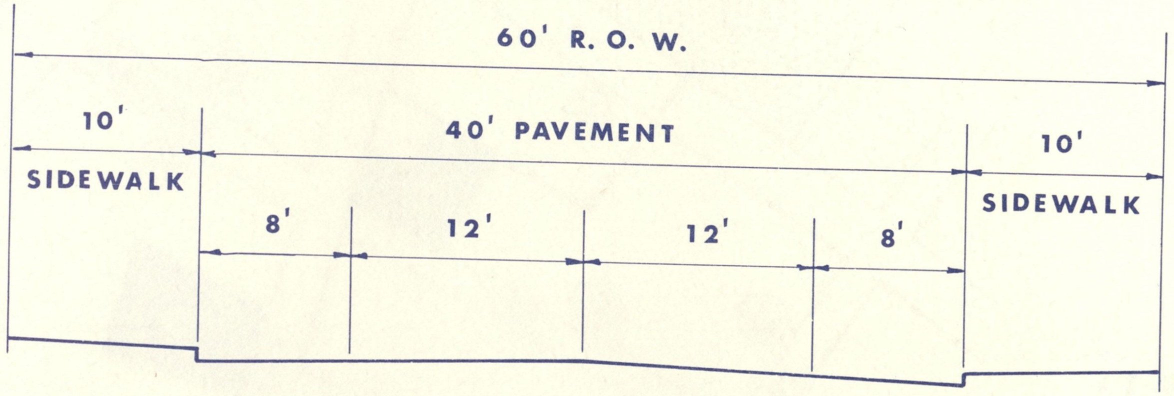
CHURCH STREET

(WESTBOUND)

STREET WIDTHS

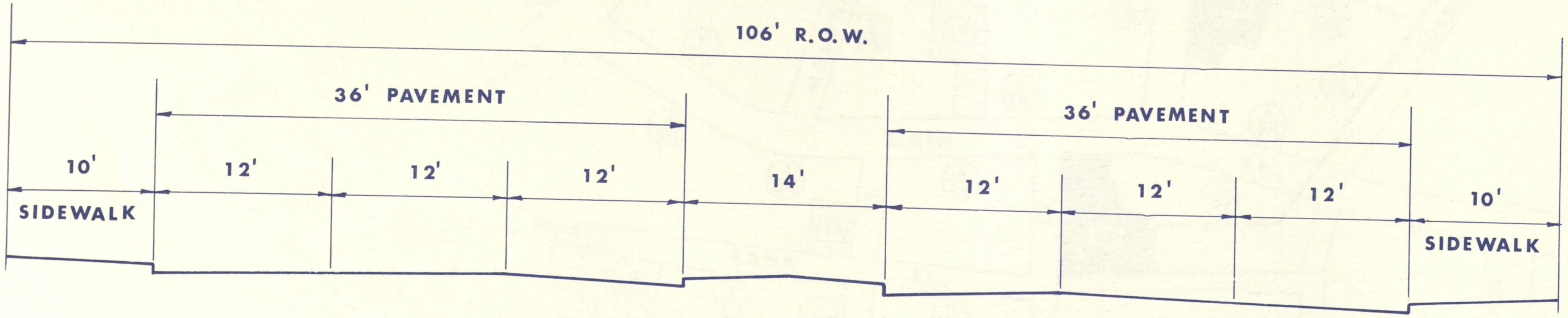

68' R.O.W.
48' PAVEMENT
10'
SIDEWALK
12'
12'
12'
12'
10'
SIDEWALK

DOWNTOWN STREETS
AND HOWARD STREET


60' R. O. W.
10'
SIDEWALK
40' PAVEMENT
10'
SIDEWALK
8'
12'
12'
8'

STANDARD 60 FT. STREETS

RESIDENTIAL ACCESS STREETS

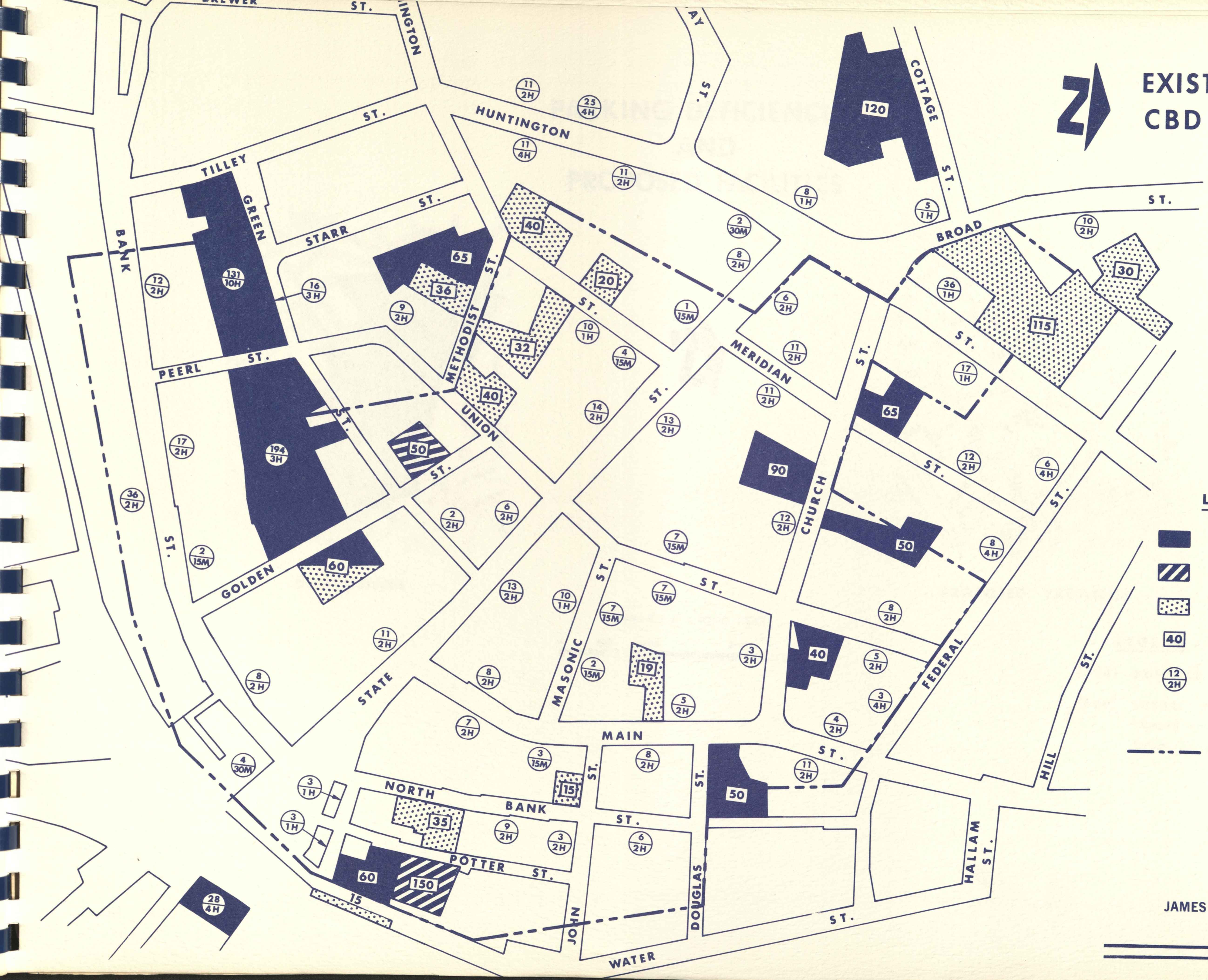

106' R.O.W.
36' PAVEMENT
36' PAVEMENT
10'
SIDEWALK
12'
12'
12'
14'
12'
12'
12'
10'
SIDEWALK

BANK STREET
(DIVIDED SECTION)

PLATE 21

JAMES P. PURCELL ASSOCIATES

EXISTING PARKING CBD & ENVIRONS


N
BREWER ST.
INGTON
AY ST.
COTTAGE ST.
HUNTINGTON ST.
TILLEY ST.
GREEN ST.
STARR ST.
BANK ST.
PEERL ST.
METHODIST ST.
UNION ST.
MERIDIAN ST.
BROAD ST.
CHURCH ST.
FEDERAL ST.
HILL ST.
GOLDEN ST.
STATE ST.
MASONIC ST.
MAIN ST.
NORTH BANK ST.
POTTER ST.
JOHN ST.
DOUGLAS ST.
HALLAM ST.
WATER ST.
120
131 10H
194 3H
65
36
40
20
32
40
50
60
30
115
65
90
50
40
19
15
35
60
150
15
50
28 4H
11 2H
25 4H
11 4H
11 2H
8 1H
5 1H
2 30M
8 2H
1 15M
10 2H
36 1H
17 1H
12 2H
6 4H
8 4H
12 2H
16 3H
9 2H
10 1H
4 15M
14 2H
13 2H
6 2H
11 2H
11 2H
12 2H
17 2H
36 2H
2 15M
2 2H
6 2H
7 15M
13 2H
10 1H
7 15M
7 15M
8 2H
11 2H
8 2H
8 2H
2 15M
3 2H
5 2H
5 2H
3 4H
4 2H
7 2H
3 15M
4 30M
3 1H
3 1H
8 2H
11 2H
9 2H
3 2H
6 2H

SCALE: 1" = 200 FEET

0 200

LEGEND

■ PARKING LOTS (Municipal - Commercial)

▨ COMMERCIAL GARAGE

░ PRIVATE LOTS

40 NUMBER OF PARKING SPACES

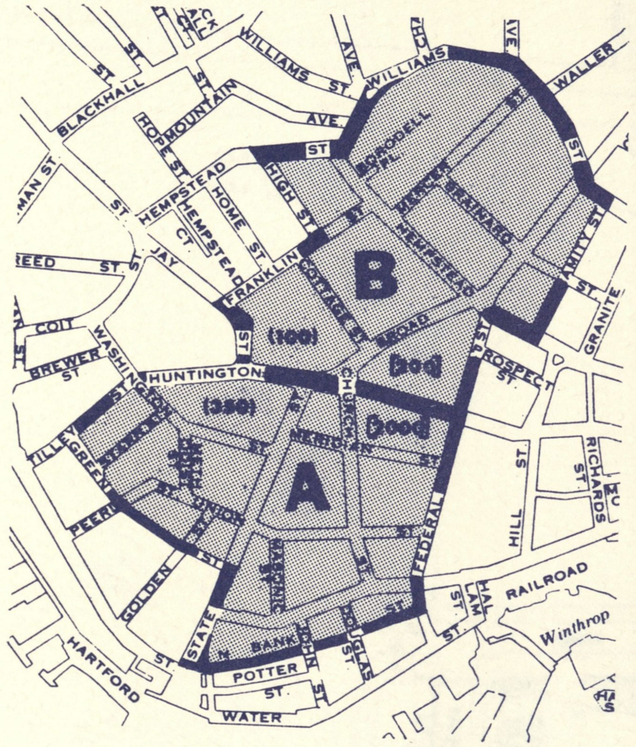
12 2H NUMBER OF METERS TIME LIMIT (H = Hours) (M = Minutes)

—·—·— CBD BOUNDARY

PLATE 22

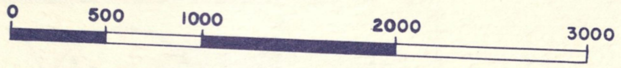
JAMES P. PURCELL ASSOCIATES

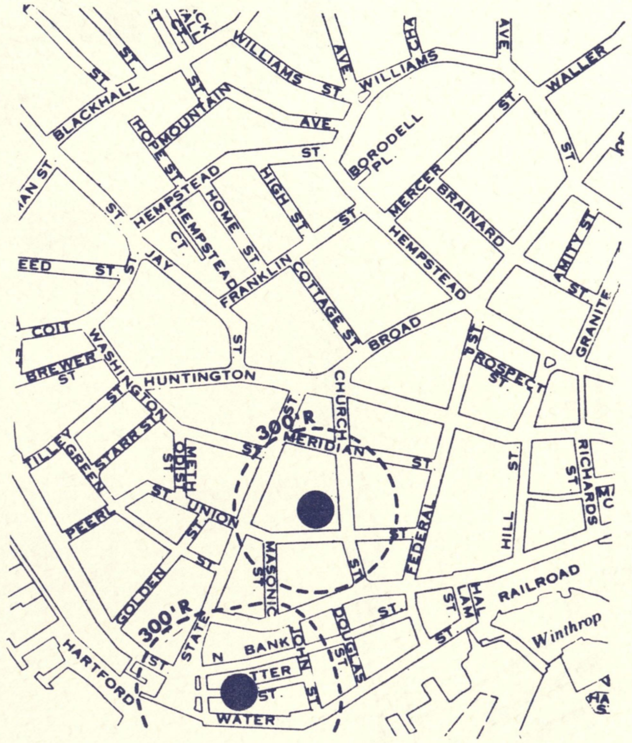
PARKING DEFICIENCIES AND PROPOSED FACILITIES


A
B
(100)
(350)
HUNTINGTON
WILLIAMS
BLACKHALL
MOUNTAIN
HEMPSTEAD
FRANKLIN
HIGH ST
BRAINARD
MERCER
BRODERICK PL.
COTTAGE ST
BROAD
CHURCH
MERIDIAN
FEDERAL
PROSPECT ST
GRANITE
TRINITY ST
WALLER
WASHINGTON
BREWER
COIT
GREEN
PEARL
UNION
GOLDEN
STATE
BANK
POTTER
WATER
MASONIC
HARTFORD
HILL ST
RICHARDS
RAILROAD
Winthrop

DEFICIENCIES

SCALE: 1" = 1000 FEET


0
500
1000
2000
3000


300'R
300'R
HUNTINGTON
WILLIAMS
BLACKHALL
MOUNTAIN
HEMPSTEAD
FRANKLIN
HIGH ST
BRAINARD
MERCER
BRODERICK PL.
COTTAGE ST
BROAD
CHURCH
MERIDIAN
FEDERAL
PROSPECT ST
GRANITE
WALLER
WASHINGTON
BREWER
COIT
GREEN
PEARL
UNION
GOLDEN
STATE
BANK
POTTER
WATER
MASONIC
HARTFORD
HILL ST
RICHARDS
RAILROAD
Winthrop

PROPOSED FACILITIES

LEGEND

(000) REQUIRED SPACES

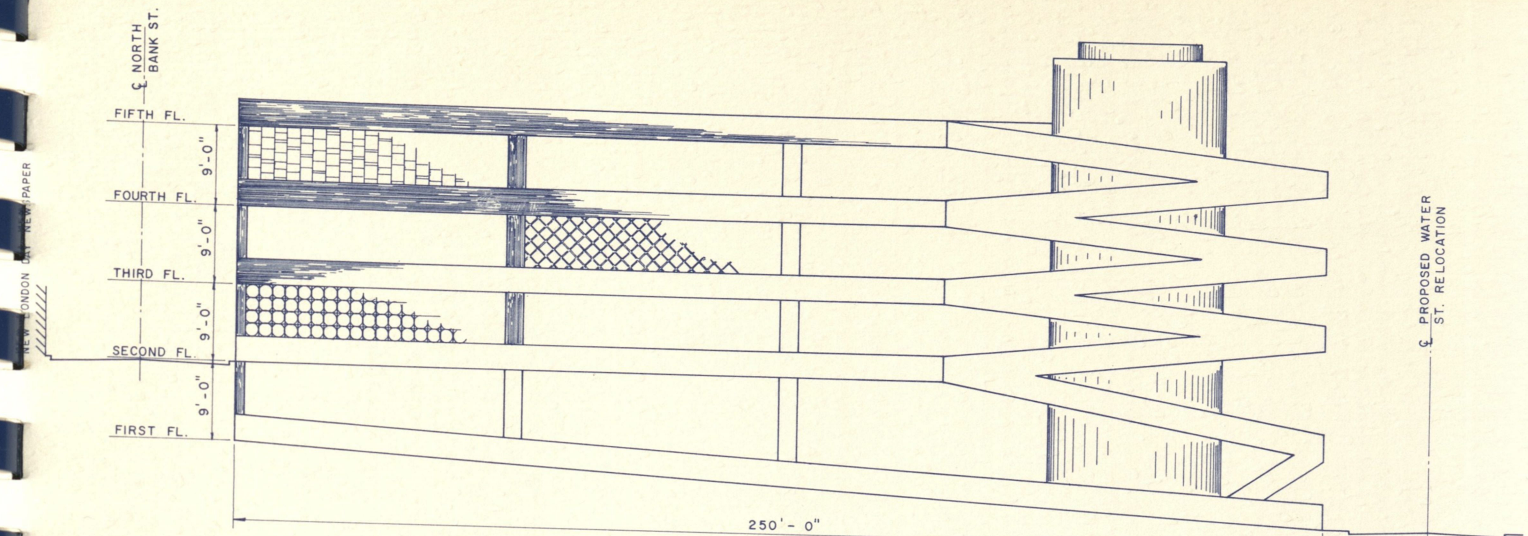
[000] FUTURE SPACES
(Based upon present known
Urban Renewal Development)

PLATE 23

JAMES P. PURCELL ASSOCIATES

NEW LONDON TRANSPORTATION STUDY

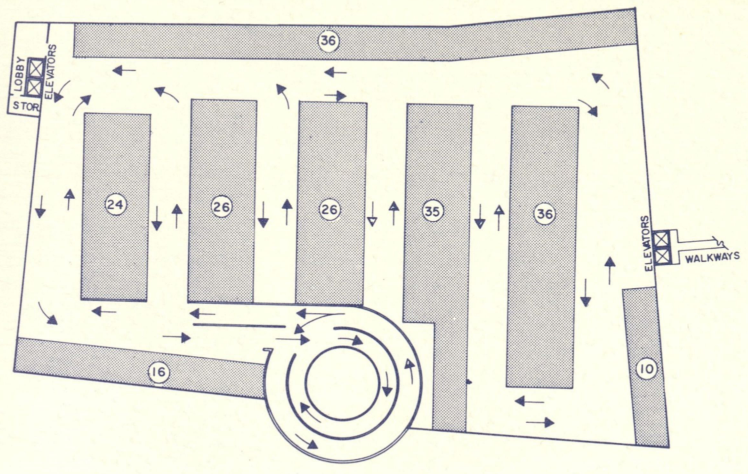
SKETCH PLAN PROPOSED PARKING GARAGE



℄ NORTH BANK ST.
FIFTH FL.
FOURTH FL.
THIRD FL.
SECOND FL.
FIRST FL.
9'-0"
9'-0"
9'-0"
9'-0"
250'-0"
℄ PROPOSED WATER ST. RELOCATION
NEW LONDON DAY NEWSPAPER

ELEVATION

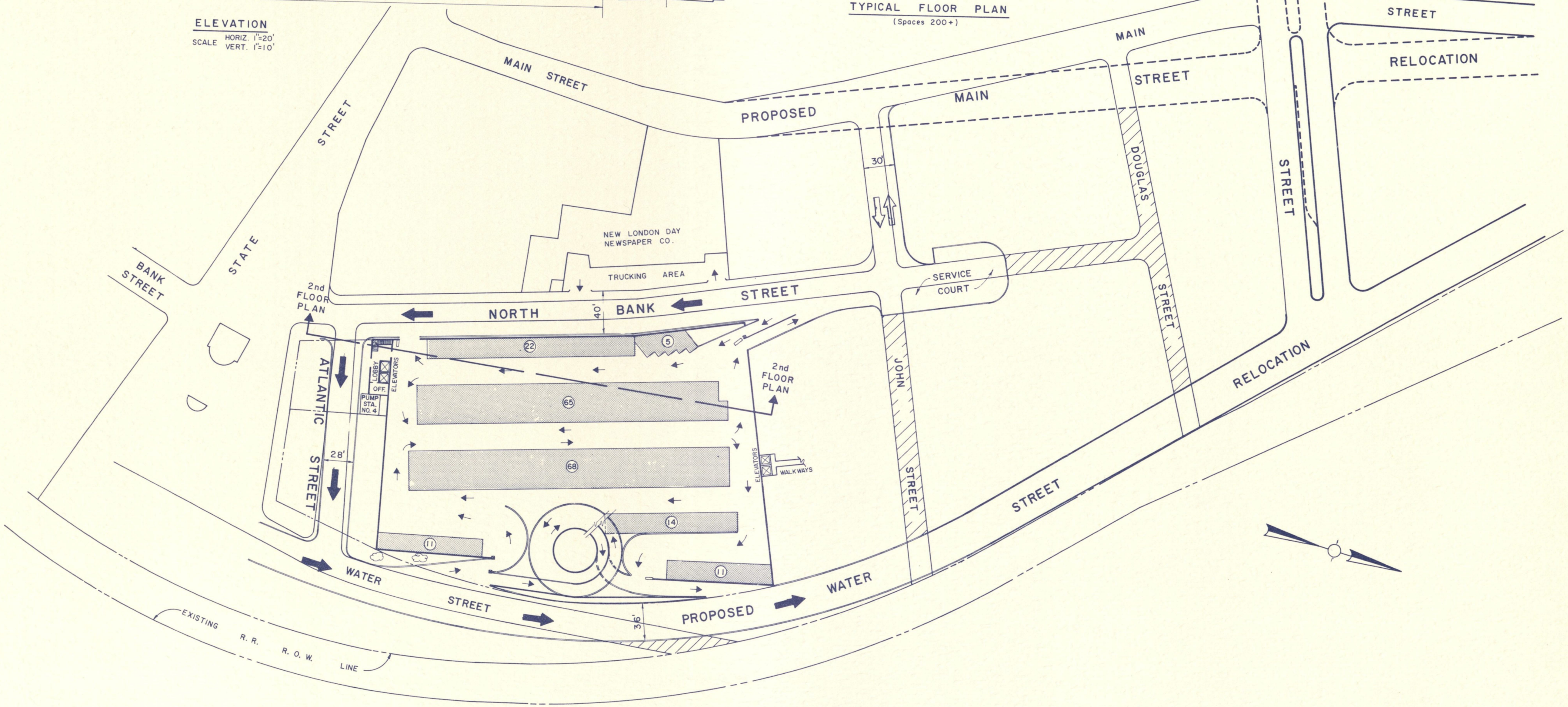
SCALE HORIZ. 1"=20' VERT. 1"=10'



LOBBY
ELEVATORS
STOR.
36
24
26
26
35
36
16
10
ELEVATORS
WALKWAYS

TYPICAL FLOOR PLAN

(Spaces 200+)



UNION STREET
STREET
RELOCATION
CHURCH STREET
MAIN STREET
PROPOSED MAIN STREET
STATE STREET
BANK STREET
DOUGLAS STREET
JOHN STREET
NEW LONDON DAY NEWSPAPER CO.
TRUCKING AREA
30'
40'
NORTH BANK STREET
SERVICE COURT
2nd FLOOR PLAN
2nd FLOOR PLAN
ATLANTIC STREET
28'
LOBBY
OFF.
ELEVATORS
PUMP STA. NO. 4
22
5
65
68
14
11
11
ELEVATORS
WALKWAYS
WATER STREET
PROPOSED WATER STREET RELOCATION
36'
EXISTING R.R. R.O.W. LINE

FIRST FLOOR PLAN

(Spaces 200 ±)

LEGEND

▪ AUTOMATIC TICKET DISPENSER
▯ COLLECTORS BOOTH
⑥ NUMBER OF VEHICLES PER AREA

PLATE 24

JAMES P. PURCELL ASSOCIATES